SONY

VIDEOCASSETTE RECORDER

UVW-1800/1400
UVW-1800P/1400P

VIDEOCASSETTE PLAYER

UVW-1600/1200
UVW-1600P/1200P

SERVICE MANUAL Vol.1

SUPPLEMENT-2

Please add and replace your manual with this SUPPLEMENT-2.

***Supplement-1 has not been issued for UVW-1800P/1600P/1400/1200/1400P/1200P.**

Applicable Manual

Vol.1 1st Edition (9-977-551-11) : 1800/1600 (UC)
Vol.1 1st Edition (9-977-566-11) : 1800P/1600P (EK)
Vol.1 1st Edition (9-977-570-11) : 1400/1200 (UC)
Vol.1 1st Edition (9-977-572-11) : 1400P/1200P (EK)

SUBJECT

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  - 4-4. SERVO CHECK (1800/1600/1800P/1600P)
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BETACAM SP

UVW-1800/1600
UVW-1800P/1600P
UVW-1400/1200
UVW-1400P/1200P (英)
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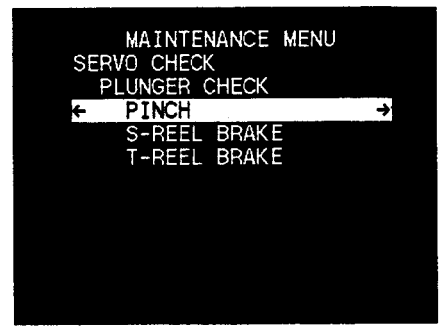
18. SPARE PARTS AND OPTIONAL FIXTURES

PLUNGER CHECK

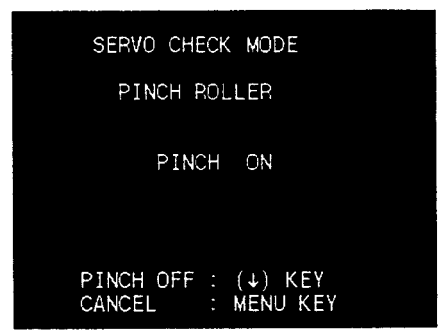
The items of the "PLUNGER CHECK" are explained here.

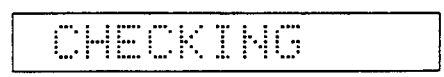


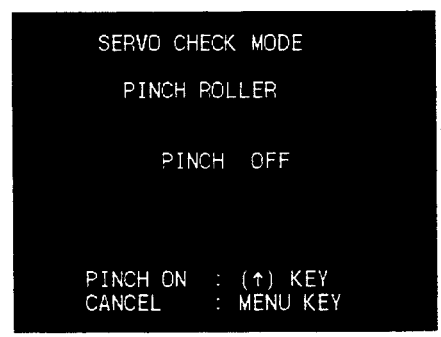
(1) PINCH

This mode checks the pinch roller solenoid.

When selecting the SET (YES) key, threading takes place and the pinch solenoid is activated.
When selecting the MENU key, the pinch solenoid is released and unthreading takes place.
And the monitor returns to the menu screen.



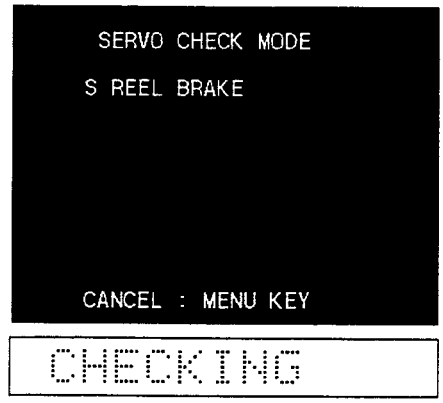




(2) S-REEL BRAKE

This item checks of the S reel brake solenoid.

1. Press the SET (YES) key.
   S-reel brake solenoid is activated.
2. Press the MENU key.
   Then S-reel brake solenoid is released.
   And the monitor returns to the menu screen.



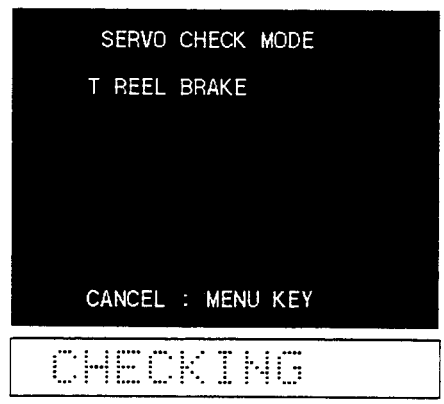
In case of NG

If the S brake solenoid does not make the actuating sound, and monitor does not change, check the S-reel brake solenoid and its driver circuit (DR-214 board and MS-39 board).

(3) T-REEL BRAKE

This mode checks of the T reel brake solenoid.

1. Press the SET (YES) key.
   T-reel brake solenoid is activated.
2. Press the MENU key.
   Then T-reel brake solenoid is released.
   And the monitor returns to the menu screen.



In case of NG

If the T brake solenoid does not make the actuating sound, and monitor does not change, check the T-reel brake solenoid and its driver circuit (DR-214 board and MS-39 board).

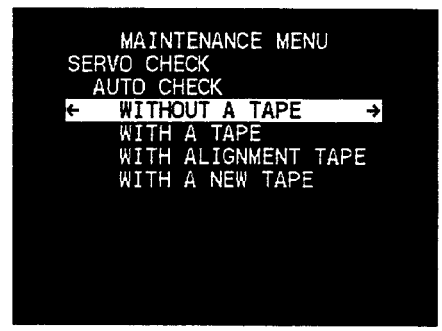
AUTO CHECK

This is the function to automatically check whether the unit operates normally or not. The check stops as soon as an error occurs during checking.

Press the (→) key to enter the diagnosis.

(1) WITHOUT A TAPE

Checks the motors, plunger and sensors individually.
The checks are performed in the following orders. They takes about 4 to 5 minutes in all.



1. Sensor Check
   Checks whether the following sensors operates correctly in cassette-out condition.

   - The reel hub size sensor should be "LARGE".
   - The oxide/metal sensor should be "METAL".
   - The cassette in sensors 1 and 2 should be "cassette out".
   - The cassette size sensor should be "SMALL".
   - The tape top sensor should be "OFF".
   - The tape end sensor should be "OFF".
   - The humidity sensor should be "DRY".
   - The small cassette MISS-REC sensor should be "ON". (only for recorders)
   - The large cassette MISS-REC sensor should be "ON". (only for recorders)

2. Cassette Compartment Operation Check
3. Reel Table Shift Operation Check
4. S Reel Motor/Brake Solenoid Operation Check
5. T Reel Motor/Brake Solenoid Operation Check
6. Drum Motor Operation Check
7. Threading Operation Check
8. Pinch Roller Solenoid Operation Check
9. Unthreading Operation Check
10. Capstan Motor Operation Check

(2) WITH A TAPE

Using a blank tape, checks the typical operation.
The check is performed in the following order. It takes about 4 to 5 minutes by using a small tape and about 8 to 9 minutes by using a large tape.

small tape (30 minutes)

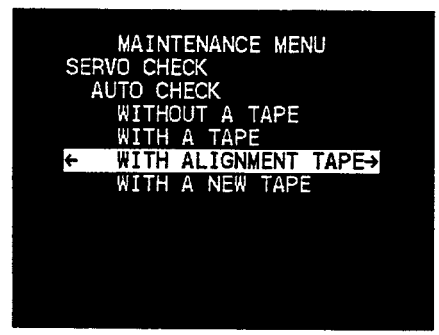
1. cassette down
2. threading
3. stop
4. rew (→ tape top)
5. play
6. search fwd x1/30, x1/2, x1, x5
7. search rev x1/30, x1/2, x1, x5
8. ff top → end
9. rew end → top
10. unthreading
11. cassette up

large tape (90 minutes)

1. cassette down
2. threading
3. stop
4. rew (→ tape top)
5. play
6. search fwd x1/30, x1/2, x1, x5
7. search rev x1/30, x1/2, x1, x5
8. ff top → end
9. rew end → top
10. unthreading
11. cassette up

(3) WITH AN ALIGNMENT TAPE

Using an alignment tape (CR2-1B or CR2-1B PS), checks the PB servo system.
The check is performed in the following order. It takes about one minute.



1. cassette down
2. threading
3. stop
4. ctl lock check
5. capstan speed check
6. switching position adjustment check
7. unthreading
8. cassette up

(4) WITH A NEW TAPE (only for recorders)

Using a non-recorded tape, checks recording and playing back of CTL and TIME CODE.
The check is performed in the following order. It takes about one and a half minute.

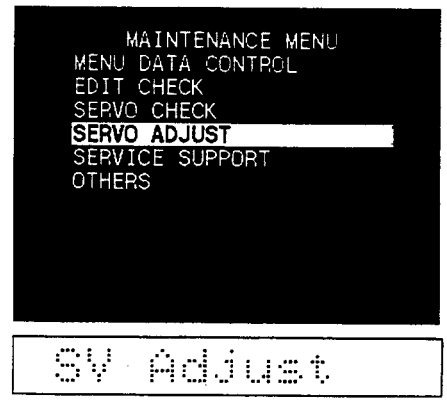
1. cassette down
2. threading
3. stop
4. rew (→ tape top)
5. rec
6. rew (→ tape top)
7. play
8. ctl lock check
9. capstan speed check1
10. capstan speed check2
    The data is compared to those from checking at using an alignment tape in order to check whether the unit records at the proper tape speed or not. Therefore, perform this check as soon as performing (3) WITH AN ALIGNMENT TAPE.
11. time code check
12. unthreading
13. cassette up

4-5. SERVO ADJUST (1800/1800P/1600/1600P) 4-4. SERVO ADJUST (1400/1400P/1200/1200P)

Servo system is adjusted automatically or semiautomatically in this menu.

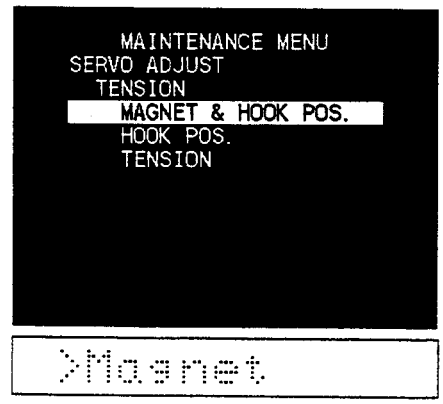
[Procedure]

1. The unit enters into the maintenance menu.
2. Move the high lighted item to the "SERVO ADJUST" on the monitor display using the (↑), (↓) keys.



3. Press the (→) key.
   Then "SERVO ADJUST" is selected, and the menu of the lower level is displayed.

4. Move the high lighted item to the item to select, using the (↑), (↓) keys.
5. Press the (→) key.
   Then the menus of the lower level are displayed.



6. Move the high lighted item to the item to select, using the (↑), (↓) keys.
7. Press the (→) key, and execute the high lighted item. (Refer to each page of item about a method of adjustment.)
8. When adjustment is finished, press the MENU key to return to the menu picture.
   Or, press the (←) key to return to the MENU key.
9. If there are other items wishing to be checked, repeat steps 4 to 8.
10. When all the checks are performed, the adjustment data is saved in EEPROM by executing the "SAVE/LOAD CONTROL".

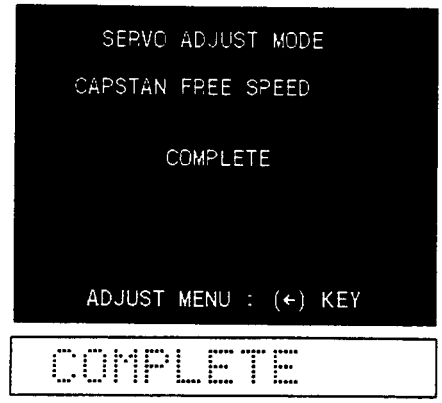
Note : When one item of adjustment is completed, the adjustment data can be saved in EEPROM by executing the "SAVE/LOAD CONTROL". When items of more than two adjustments are completed, the adjustment data can be saved in EEPROM by executing the "SAVE/LOAD CONTROL".
Never turn off the power in the adjustment. If the power is turned off in the adjustment, the adjustment data will be erased.

11. When closing the maintenance menu, press the MENU key.

Note : When the MENU key is pressed in executing the check, the check is ended by force. Then, the monitor returns to the menu picture.

S/T REEL & CAPSTAN

Adjustment related to S-reel, T-reel and capstan are performed automatically.
Confirm that adjustment is performed, and "COMPLETE" is displayed.



Items of adjustment

- s reel fg check
- s reel offset/friction
- s reel torque
- t reel fg check
- t reel offset/friction
- t reel torque
- capstan fg duty
- capstan free speed

When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

In case of NG

If "ADJUST INCOMPLETE" and contents of the trouble are displayed on the monitor. In this case, check the reel FG amplifier circuit and the reel motor driver circuit, the capstan motor driver circuit and the capstan FG amplifier circuit (DR-214 board, SS-53 board).

S-REEL ONLY

Adjustment related to S-reel are performed automatically.
Confirm that adjustment is performed, and "COMPLETE" is displayed.

Items of adjustment

s reel fg check
s reel offset/friction
s reel torque

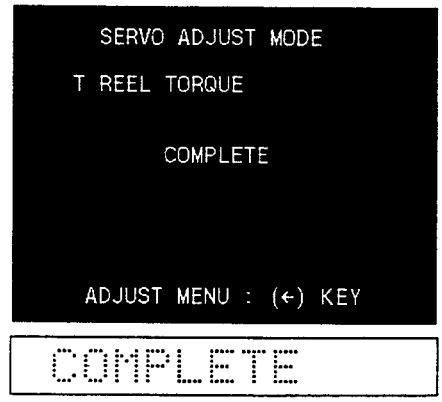
When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

In case of NG

If "ADJUST INCOMPLETE" and contents of the trouble are displayed on the monitor. In this case, check the reel FG amplifier circuit and the reel motor driver circuit (DR-214 board, SS-53 board).

T-REEL ONLY

Adjustment related to T-reel are performed automatically. Confirm that adjustment is performed, and "COMPLETE" is displayed.



Items of adjustment

t reel fg check
t reel offset/friction
t reel torque

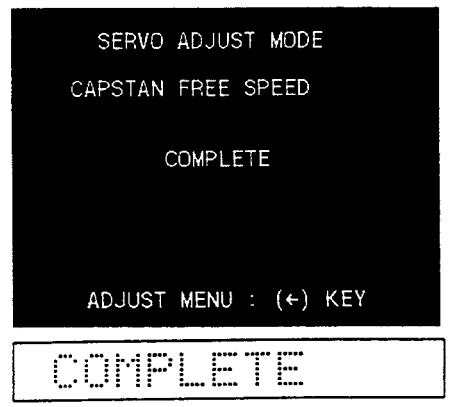
When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

In case of NG

If "ADJUST INCOMPLETE" and contents of the trouble are displayed on the monitor. In this case, check the reel FG amplifier circuit and the reel motor driver circuit (DR-214 board, SS-53 board).

CAPSTAN ONLY

Adjustment related to capstan are performed automatically. Confirm that adjustment is performed, and "COMPLETE" is displayed.



Items of adjustment

capstan fg duty
capstan free speed

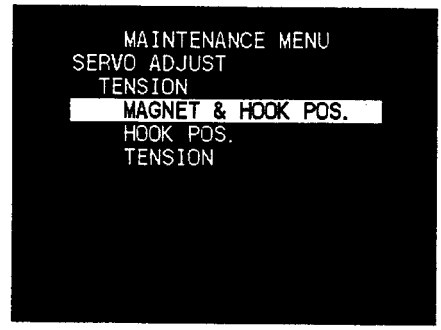
When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

In case of NG

If "ADJUST INCOMPLETE" and contents of the trouble are displayed on the monitor. In this case, check the capstan motor driver circuit (DR-214 board and SS-53 board) and the capstan FG amplifier circuit (SS-53 board).

TENSION

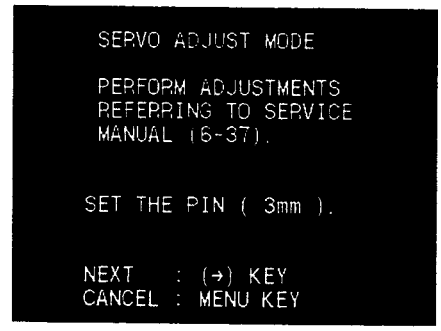
The item "TENSION" are explained here.



(1) MAGNET & HOOK POS

Tension regulator magnet adjustment and hook position adjustment.

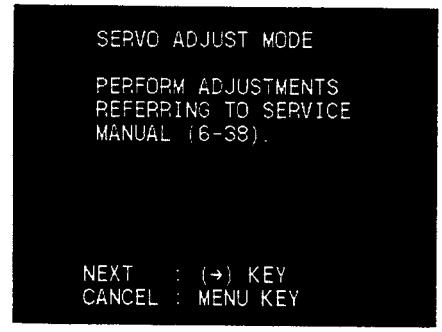
* Refer to section 6-37.



(2) HOOK POS

Tension regulator hook position adjustment only.

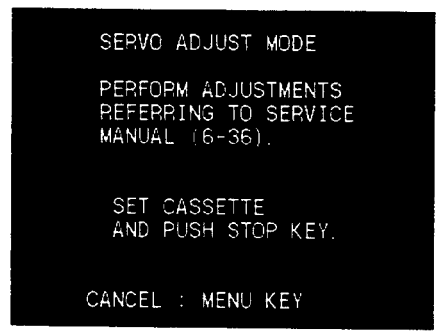
* Refer to section 6-38.



(3) TENSION

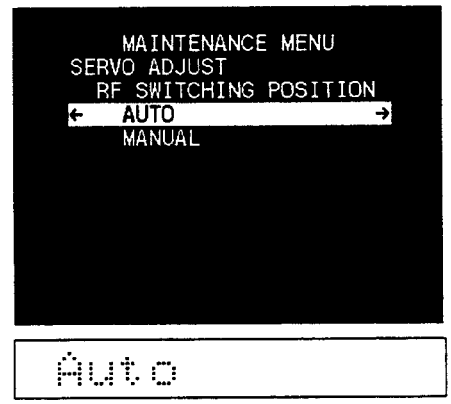
Tension adjustment using Tentelometer.

* Refer to section 6-36.



RF SWITCHING POSITION

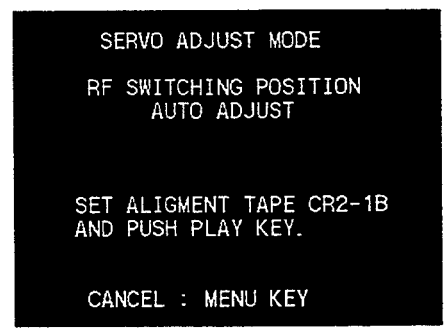
The sub menus of the "RF SWITCHING POSITION" are explained here.



(1) AUTO

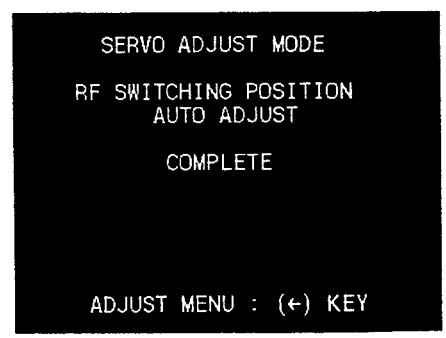
This mode adjusts the RF switching position automatically.
Insert an alignment tape CR2-1B, and press the play button.

Note : Be sure to use the alignment tape CR2-1B.
Do not use other alignment tape.



Confirm that adjustment is performed, and "COMPLETE" is displayed.
The cassette tape eject automatically.

When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".



In case of NG
If "ADJUST INCOMPLETE" and contents of the trouble are displayed on the monitor. In this case, check that the playbacked alignment tape was CR2-1B (CR2-1B PS) or not. And check the DO pulse circuit.

(2) MANUAL

This mode adjusts the RF switching position manually.
* Refer to section 7-13.

PICTURE SPLITTING

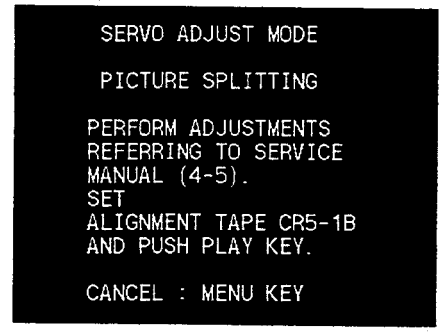
This mode adjusts the picture splitting.

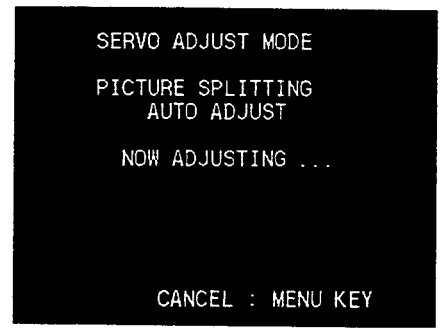
Note : Before performing this adjustment, be sure to set an alignment tape CR5-1B/CR5-1B PS to the timecode, 8:00.
For adjustment, the portion between 8:00 and 26:00 on the tape is used.
Do not use the portions of 8:00 and former and 26:00 and later on the tape, because the adjustment cannot be performed correctly.

Select AUTO or MANUAL from the monitor display.

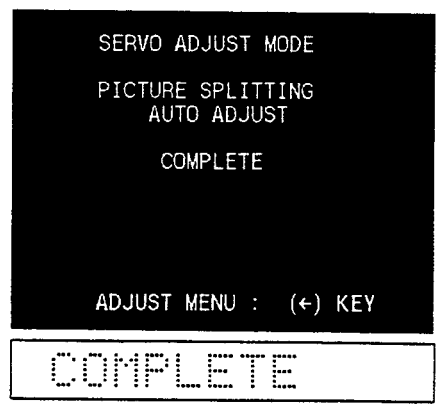
(1) AUTO

The adjustment are performed automatically.
As prescribed on the monitor display, insert the alignment tape CR5-1B (CR5-1B PS) with set to 8:00. Then, press the PLAY key.





Confirm the adjustment is performed, and "COMPLETE" is displayed.



When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

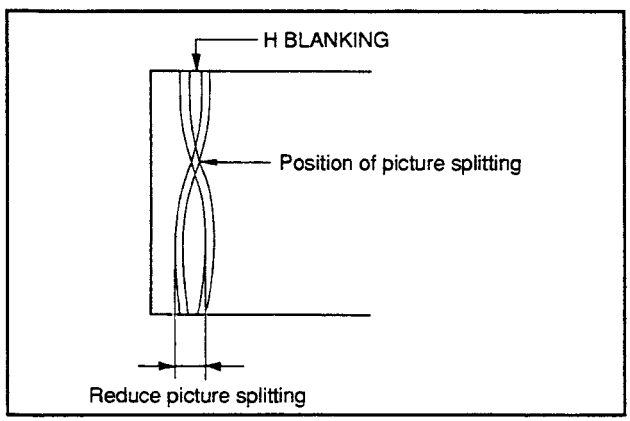
(2) MANUAL

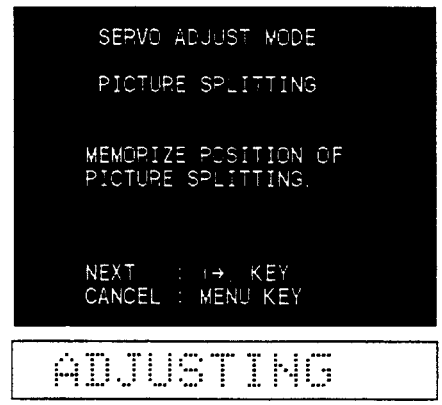
1. Connect the video monitor to TP201 on the VP-43 board using the clip cable.

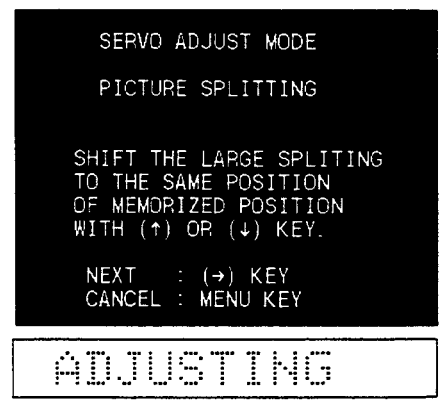
   * Set the monitor as following.
     - H DELAY
     - AFC FAST
     - INT SYNC

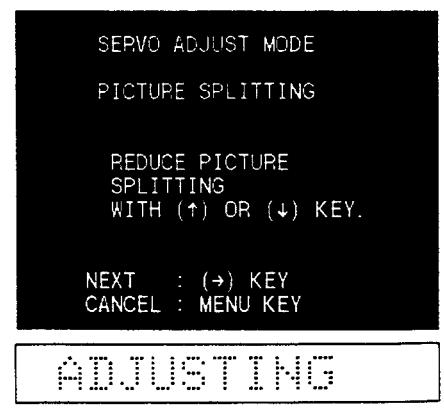
Note : It is impossible to observe picture splitting with the video monitor which captured the H sync strongly by the AFC circuit in the monitor.

2. Make adjustment according to the instruction shown on screen.

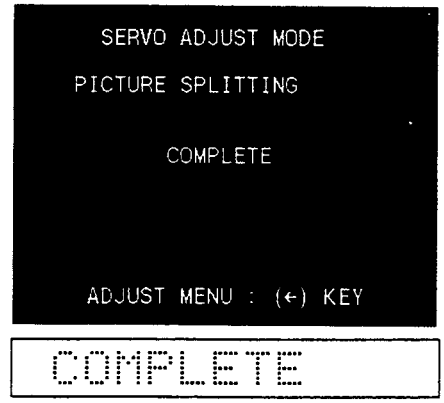








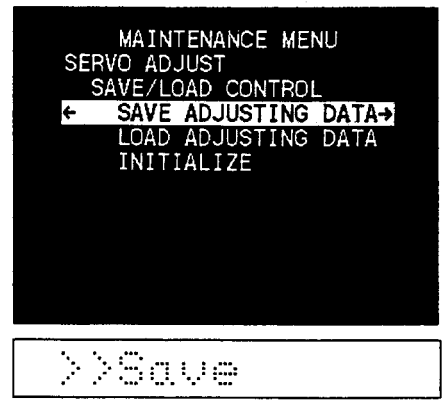
3. Confirm that adjustment is performed and "COMPLETE" is displayed.



When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

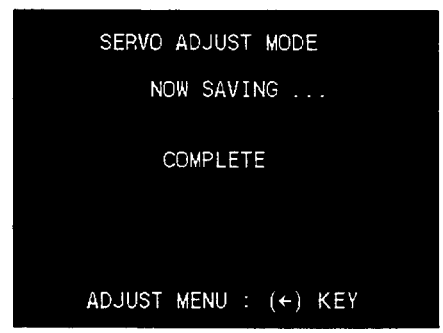
SAVE/LOAD CONTROL

The sub menus of the "SAVE/LOAD CONTROL" are explained here.



(1) SAVE ADJUSTING DATA

Save the adjustment data in EEPROM.
Confirm that Save is performed, and "COMPLETE" is displayed.



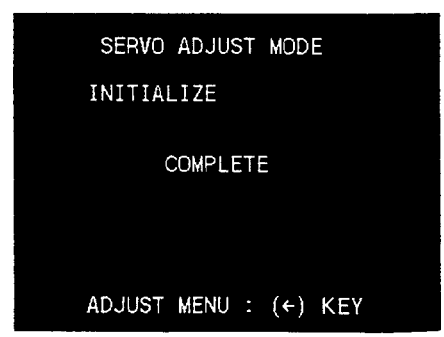
Note : After adjustment is completed, make sure to save in this mode.

(2) LOAD ADJUSTING DATA

Load the adjustment data in EEPROM.
Confirm that Load is performed, and "COMPLETE" is displayed.

(3) INITIALIZE

Perform this item only when either MS-39 board or microcomputer on the MS-39 board is exchanged.
Load the Initial data of adjustment data from ROM.
Load the initial data of the adjustment data from ROM.
Confirm that Initialize is performed, and "COMPLETE" is displayed.



4-6. SERVICE SUPPORT (1800/1800P/1600/1600P) 4-5. SERVICE SUPPORT (1400/1400P/1200/1200P)

Overview of self-diagnosis function

Servo and mechanical control systems process software in microprocessors, and make a judgement about errors by various informations. As a result, we consider that only to display the error codes is not enough information to analyze the probable cause which an error occurs. Especially, when occurring the non-repeatable error, it is very difficult to judge where we would check. For improving the efficiency of service, we have studied how to shorten the time which customers are inconvenient. From the study, we conclude that the following functions are on board of the unit.

(1) The unit carries out an analysis from the data when the error has occurred. As a result of the analysis, the probable blocks with troubled are specified.
(2) For every block, the unit diagnoses itself as much as possible. When needing the assistance of a person, the unit focuses the troubled portion with proceeding the diagnosis in an interactive manner from the characters on the monitor display.
(3) The unit automatically checks that the operations of devices and tape path system are normally performed or not.
(4) The unit diagnoses whether any error is occurred on the individual device or not.
The previous "SERVO CHECK" operates the individual device only, but does not diagnose the device.
As the consistency of "SERVICE SUPPORT", we add the diagnosis functions for the individual device.
From this addition, the previous "SERVO CHECK" function might not be necessary, but we decide that the function is preserved by dividing the purposes at using into the followings.

Purpose of "SERVICE SUPPORT"
Checks that the individual device operates normally.
Detects the device which an error occurs.

Purpose of "SERVO CHECK"
Checks the operation of the individual device. In checking, measures the waveform and so on.
This is used for various adjustments and checks.

(5) "ERROR LOG CLEAR"
The previous "ERROR LOG CLEAR" could not reset the ERROR LOGs which had occurred previously. The unit could not be decided the ERROR LOGs which were remained in the software had been repaired or not.
Therefore, we add a reset function.

To operate the added functions, the system control and servo ROMs must be the following versions.

SS-53 board
System Control
IC4 Ver 2.00 8-759-326-97 C1001-UVW1000SY-V200
Servo
IC212 Ver 2.00 8-759-326-96 C2001-UVW1000SV-V200

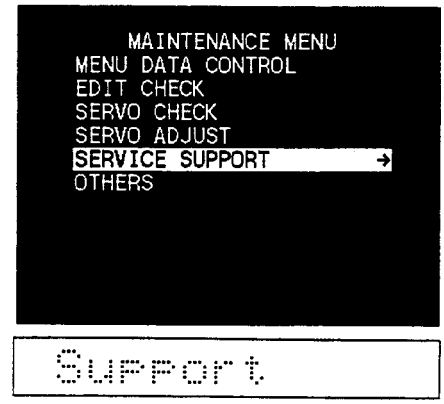
* The unit also diagnoses the errors which occurred in the ROM of the previous version after replacing the ROM to that of the above version, though some analysis cannot be done. However, be sure to replace the pair of ROMs. When replacing one ROM, the unit might not only be unfunctioned but also be misoperated.

These added functions are our first attempt and are designed by trial and error from the past experience. Some design compromises are in these functions under constraints. Therefore, we have considered that these functions are not completed 100% but are coming along. Please send the comment about the functions, if you have any comment after using the functions.

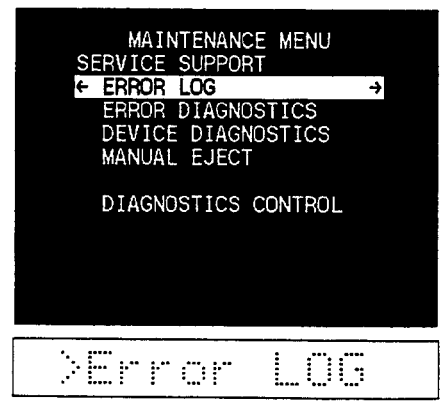
This item has the functions to display and diagnose the errors and the error codes that have occurred in the past and also the function to diagnose the devices. Furthermore, this has the function to clear the ERROR LOG.

[Procedure]

1. The unit enters into the maintenance menu.
2. Move the high lighted item to the "SERVICE SUPPORT" on the monitor display using the (↑), (↓) keys.



3. Press the (→) key.
   Then "SERVICE SUPPORT" is selected, and the menu of the lower level is displayed.



4. Move the high lighted item to the item to select, using the (↑), (↓) keys.
5. Press the (→) key.
   Then the menus of the lower level are displayed.
6. Move the high lighted item to the item to select, using the (↑), (↓) keys.
7. Press the (→) key, and execute the high lighted item.
   (Refer to each page of item about a method of check.)
8. When check is finished, press the MENU key to return to the menu picture.
9. If there are other items wishing to be checked, repeat steps 4 to 8.
10. When closing the maintenance menu, press the MENU key.

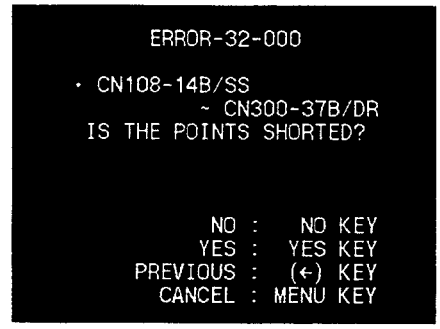
To suspend the diagnosis temporarily

In the following cases, be sure to save the result of the diagnosis until the diagnosis is suspended.

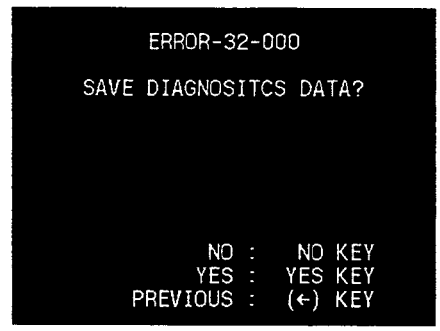
- In the case that continuing the diagnosis after suspending the diagnosis.
- In the case that turning off the power during diagnosing depending on the diagnosis items.

[How to operate]

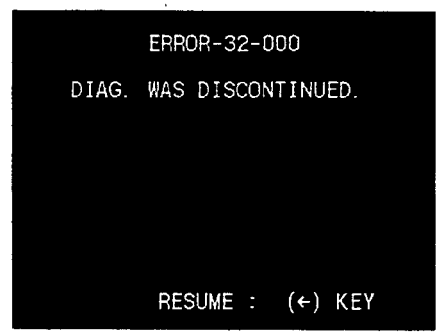
1. Press the MENU key when the display with suspending the diagnosis is indicated.



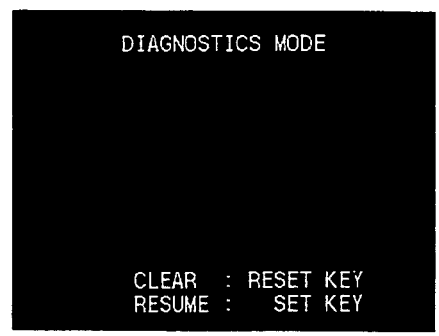
2. Press the YES key to save the data of the diagnosis.

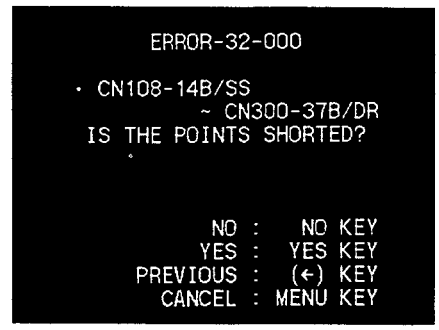


3. When "DIAG. WAS DISCONTINUED." is displayed, turn off the power and perform some repair jobs to be necessary.



4. After completing the repair jobs, turn on the power again. Then, press the SET key to continue the diagnosis.





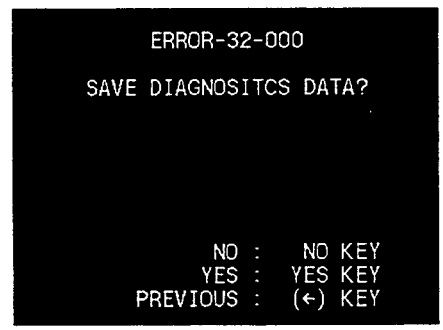
Note : When turning off the power once, be sure to save the data of the diagnosis.
If not, the diagnosis cannot be continued.

To abort the diagnosis during diagnosing

The diagnosis is aborted during diagnosing.

[How to operate]

1. Press the MENU key when any display is indicated.
2. Press the NO key to stop saving the data.



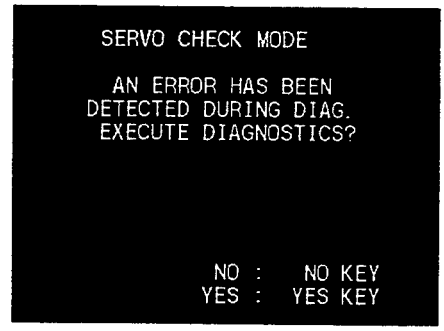
3. Abort the diagnosis.

When a new error is occurred during diagnosing

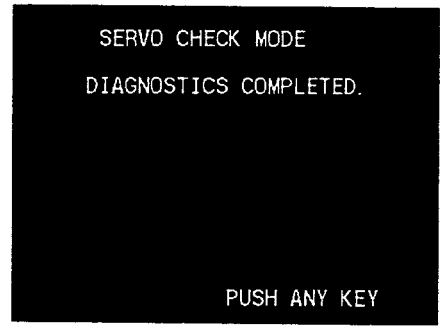
When a new error is occurred during diagnosing, diagnosing the new error takes priority over now-diagnosing. Therefore, the unit stops the now-diagnosing.
First, the unit diagnoses the new error. Then, if necessary, the unit diagnoses the last diagnosis again.

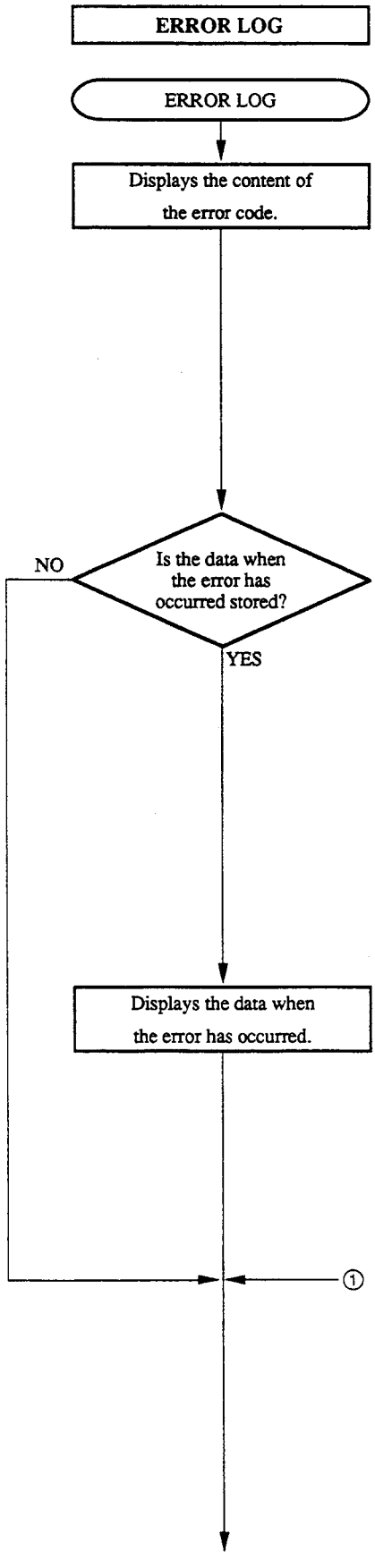
[How to operate]

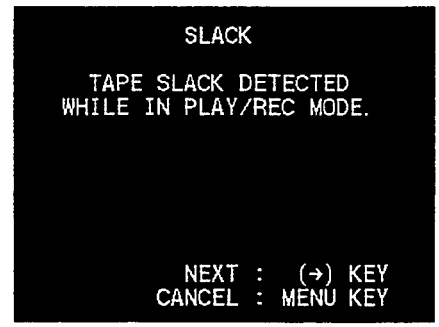
1. Press the YES key to diagnose the new error.

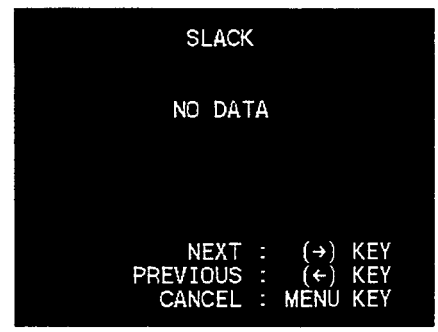


2. After completing the diagnosis of the new error, perform the last diagnosis with gone back to the first step if necessary.

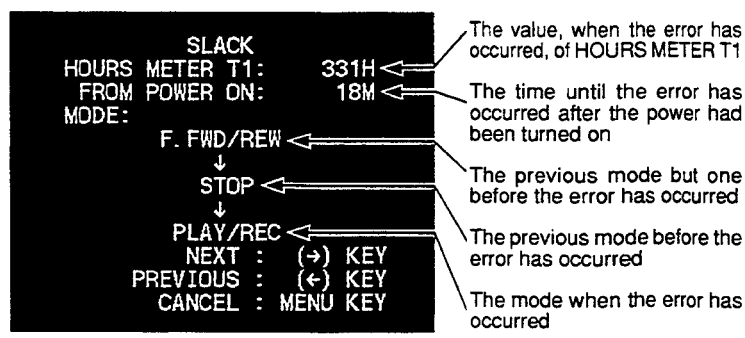








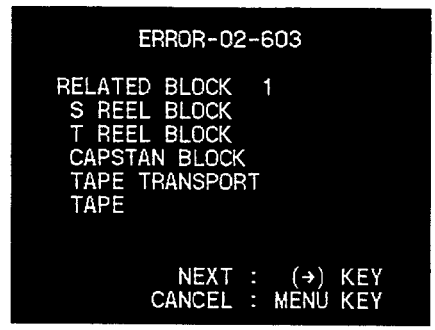
- Maximum two data of the errors that have occurred are stored from the most recent one.
  However, the data are not stored when the power is turned off while saving the data.


SLACK
HOURS METER T1: 331H
FROM POWER ON: 18M
MODE:
F. FWD/REW
↓
STOP
↓
PLAY/REC
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
The value, when the error has occurred, of HOURS METER T1
The time until the error has occurred after the power had been turned on
The previous mode but one before the error has occurred
The previous mode before the error has occurred
The mode when the error has occurred

Continues to the next page.

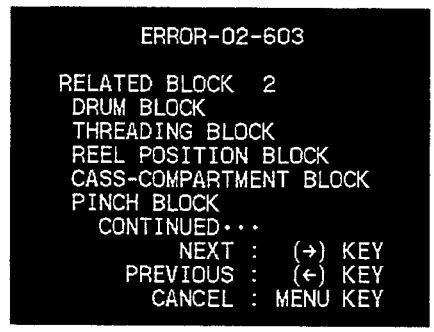
Displays the probable blocks with troubled

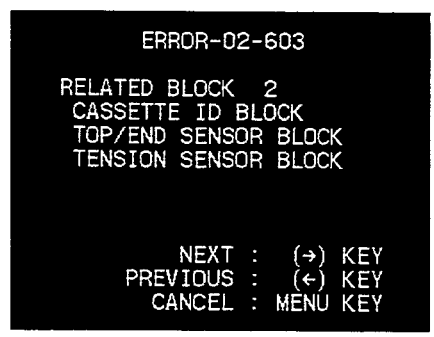
- The unit carries out an analysis from the data when the error has occurred.
  As a result of the analysis, the probable blocks with troubled are divided into two blocks.



(1) RELATED BLOCK 1

····· Highly probable blocks with troubled



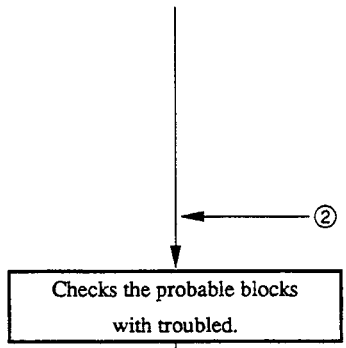


(2) RELATED BLOCK 2

····· Probable blocks with troubled

- In the following cases, RELATED BLOCK 1 are not displayed.

(1) In the case that the most highly probable blocks cannot be specified from the data when the error has occurred.
(2) In the case that the data when the error has occurred is not stored.
(3) In the case that the diagnosis is run by ERROR DIAGNOSTICS.

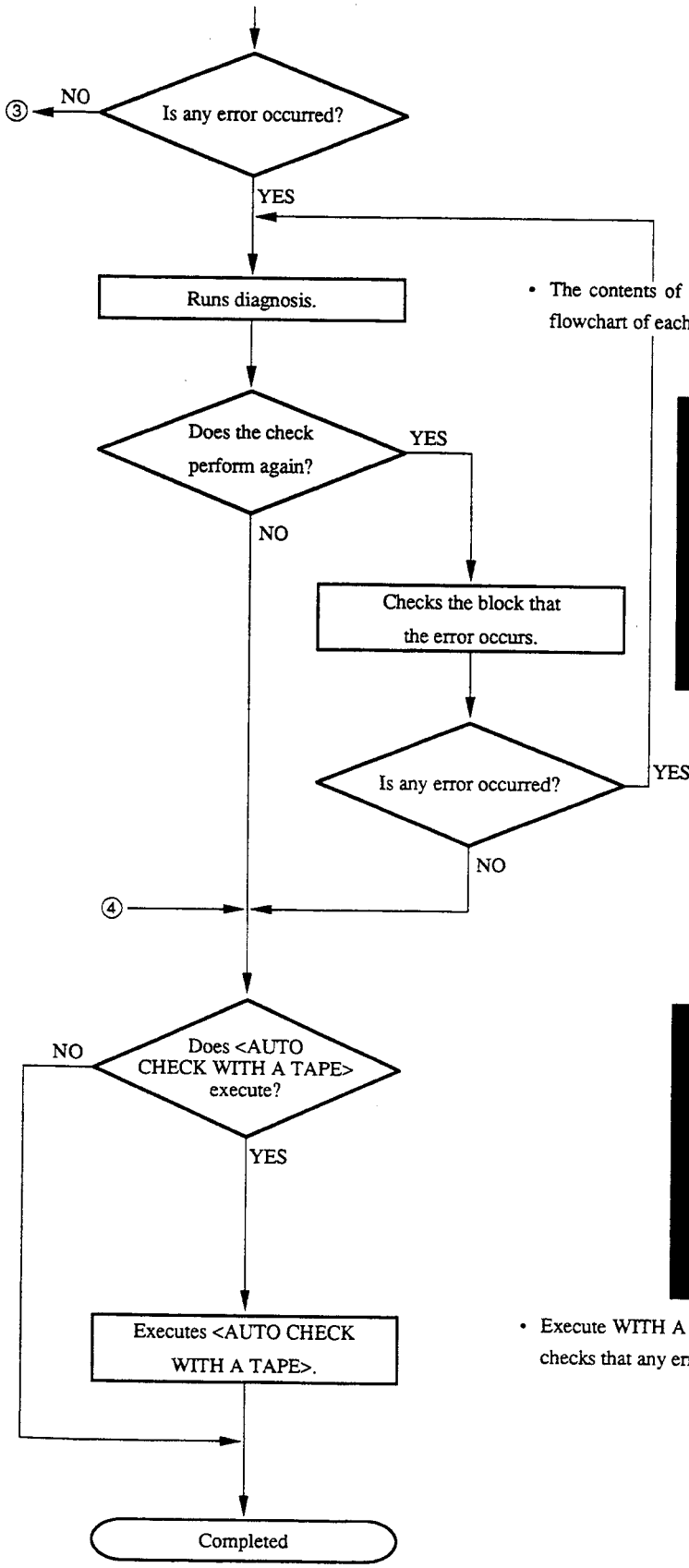


- When TAPE TRANSPORT or TAPE is displayed on the RELATED BLOCKs, the probable cause is that the tape clings to tape path system and drum.
  In the case that a cassette tape is in the unit, check that the tape clings to the drum, capstan, heads, tape guides and so on or not. Then, take out the cassette tape.
  In the case of using the cassette tape when the error has occurred, check that something attaches to the tape or not.

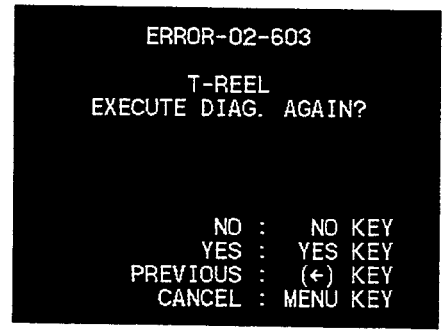
- Checks each block in order.
  The contents of check are different from each device. For details, refer to the flowchart of each device.

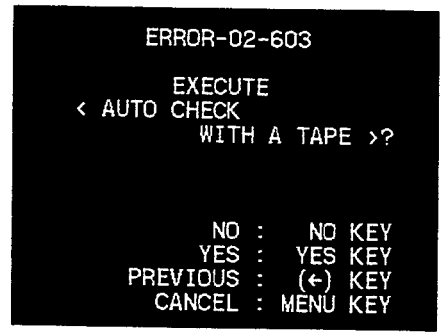
- Press the (→) key to enter the unit into diagnosis function.
  Press the (←) key to return the picture to the previous picture.
  Press the (↓) key to skip the block that is diagnosed once.

Continues to the next page.

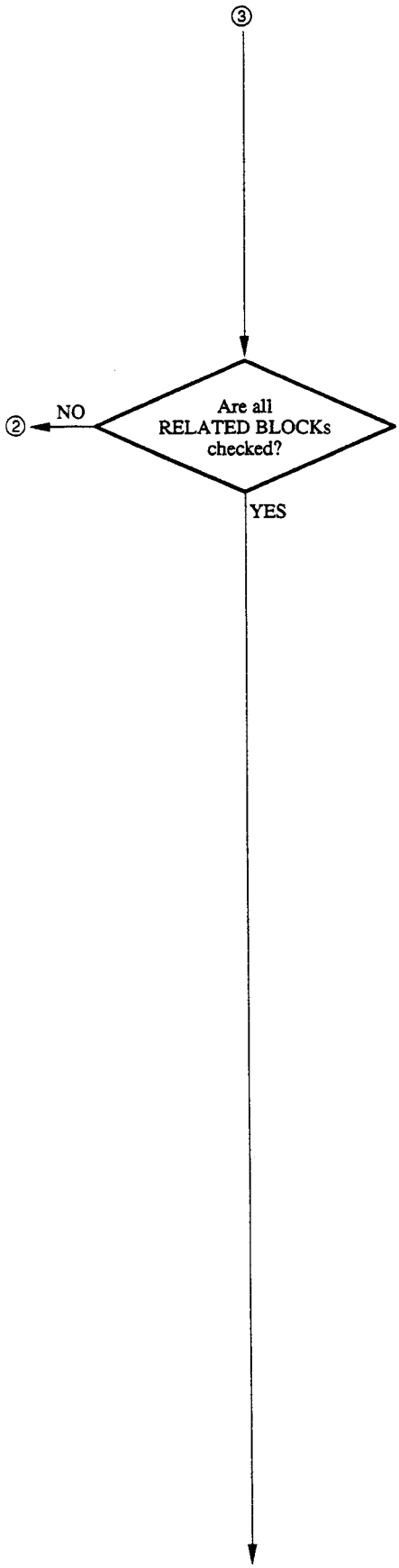


- The contents of check are different from each device. For details, refer to the flowchart of each device.





- Execute WITH A TAPE in SERVO CHECK or AUTO CHECK. Then, the unit checks that any error occurs or not automatically.



ERROR-02-603

T-REEL
CHECK COMPLETED.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

ERROR-20-018

DEFECT COULD NOT BE
FOUND. GO TO
THE NEXT PROCEDURE.

NEXT : (→) KEY
CANCEL : MENU KEY

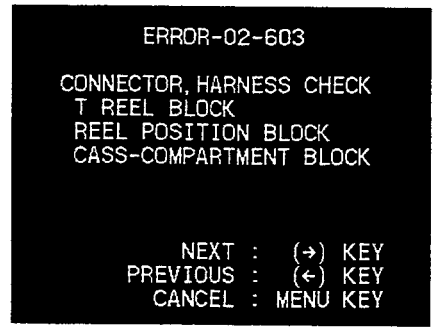
ERROR-02-603

TAPE PATH CLEANING
TAPE PATH CHECK/ADJUST
REEL TABLE HEIGHT CHECK

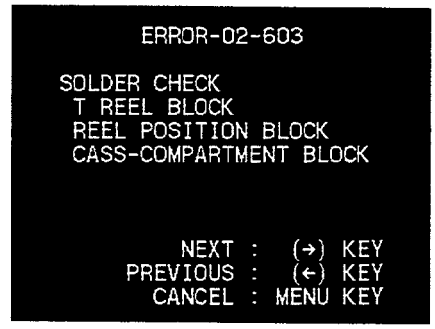
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- Perform check with referring to section 7 in Service Manual Vol. 1.

Continues to the next page.

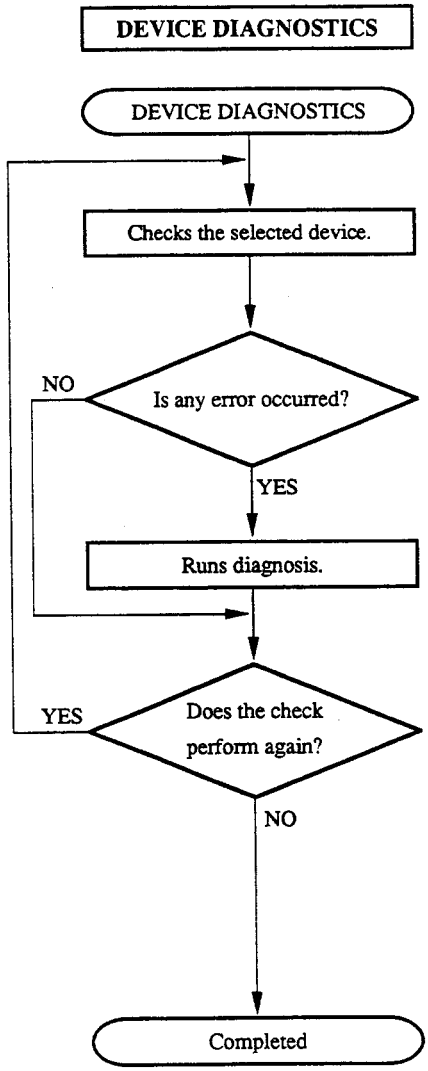


- Check all connectors and harnesses in relation to the blocks that are displayed with referring to block diagrams.



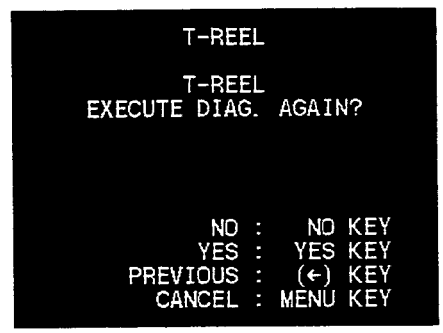
- Check the solders on the blocks that are displayed with referring to block diagram.

④

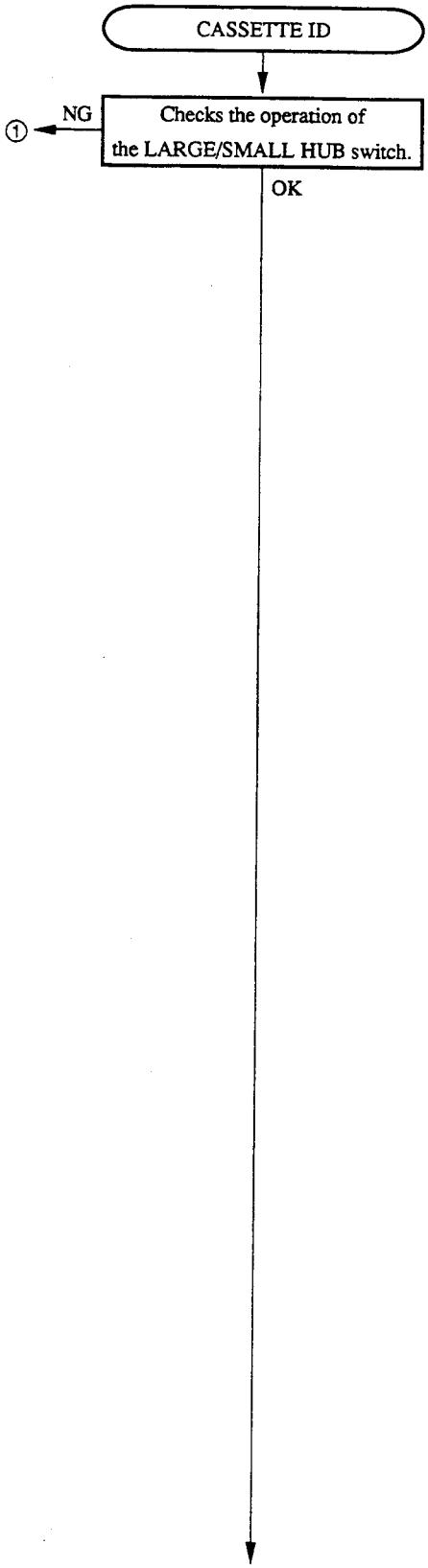


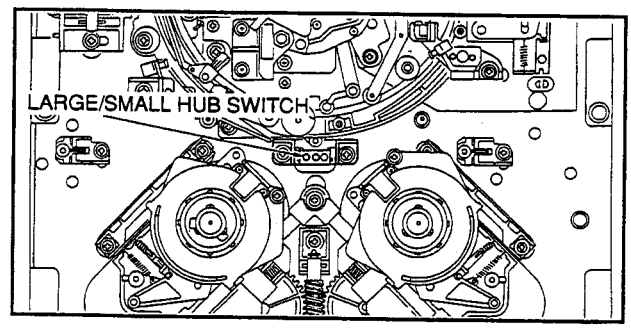
- The contents of the check are different from each device. For details, refer to the flowchart of each device.

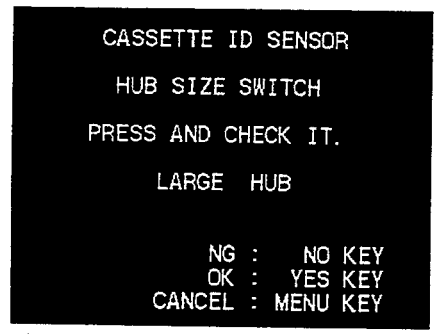
- The contents of the diagnosis are different from each device. For details, refer to the flowchart of each device.



(1) CASSETTE ID Diagnosis



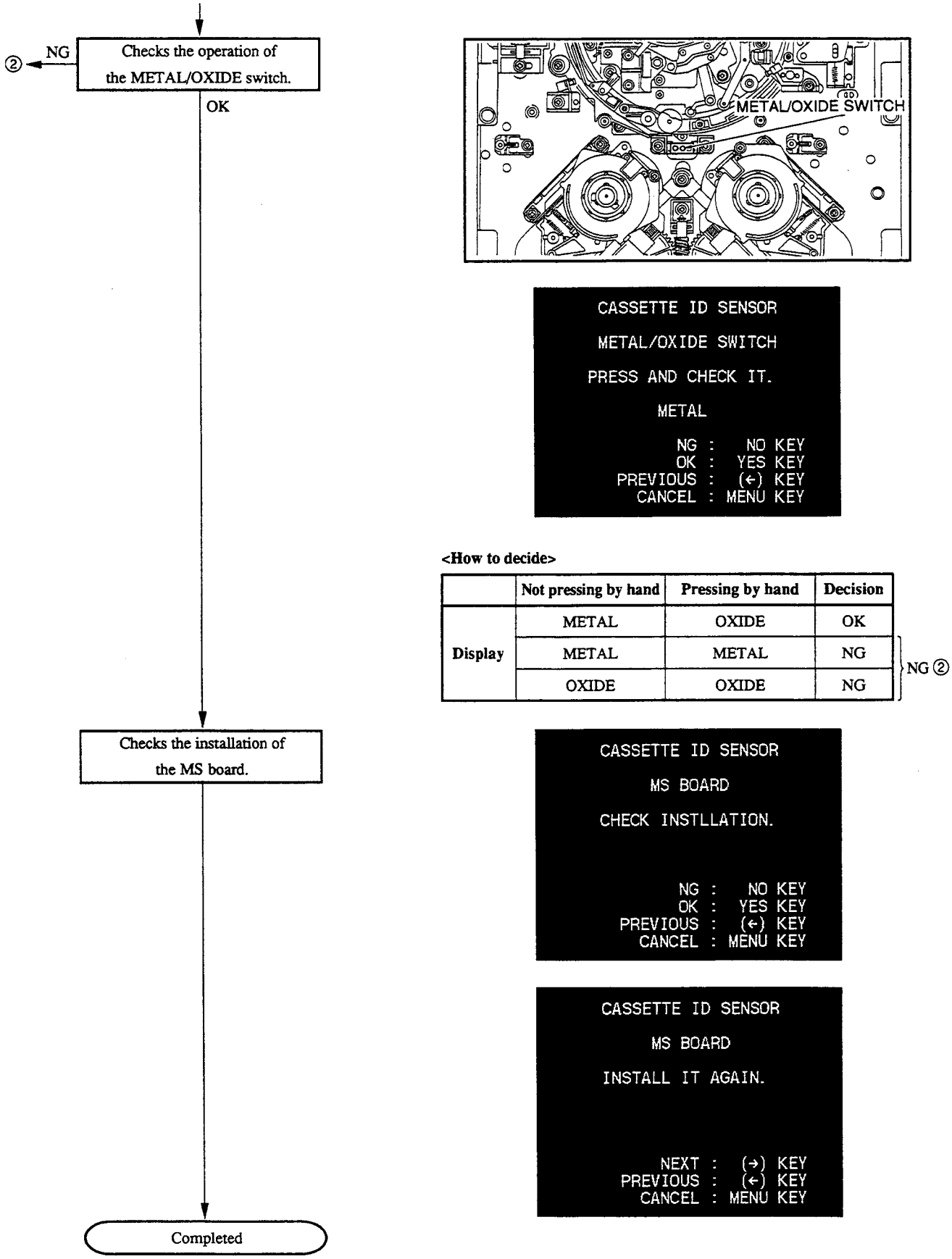




<How to decide>

	Not pressing by hand	Pressing by hand	Decision	
Display	LARGE HUB	SMALL HUB	OK	
	LARGE HUB	LARGE HUB	NG	NG ①
	SMALL HUB	SMALL HUB	NG	

4-50 (1800/1800P/1600/1600P)
4-48 (1400/1400P/1200/1200P)



<How to decide>

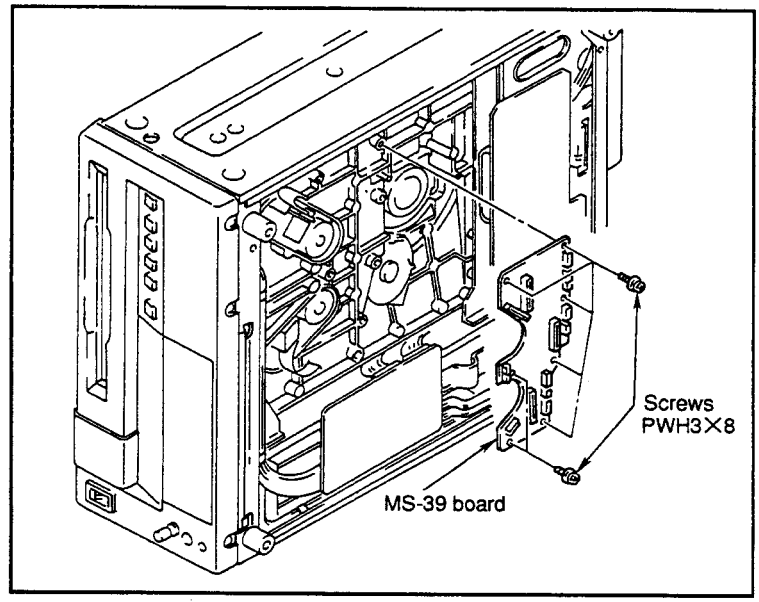
	Not pressing by hand	Pressing by hand	Decision	
Display	METAL	OXIDE	OK	
	METAL	METAL	NG	NG ②
	OXIDE	OXIDE	NG	

①②

Checks the installation of the MS board.

Completed

• Installation of the MS-39 board

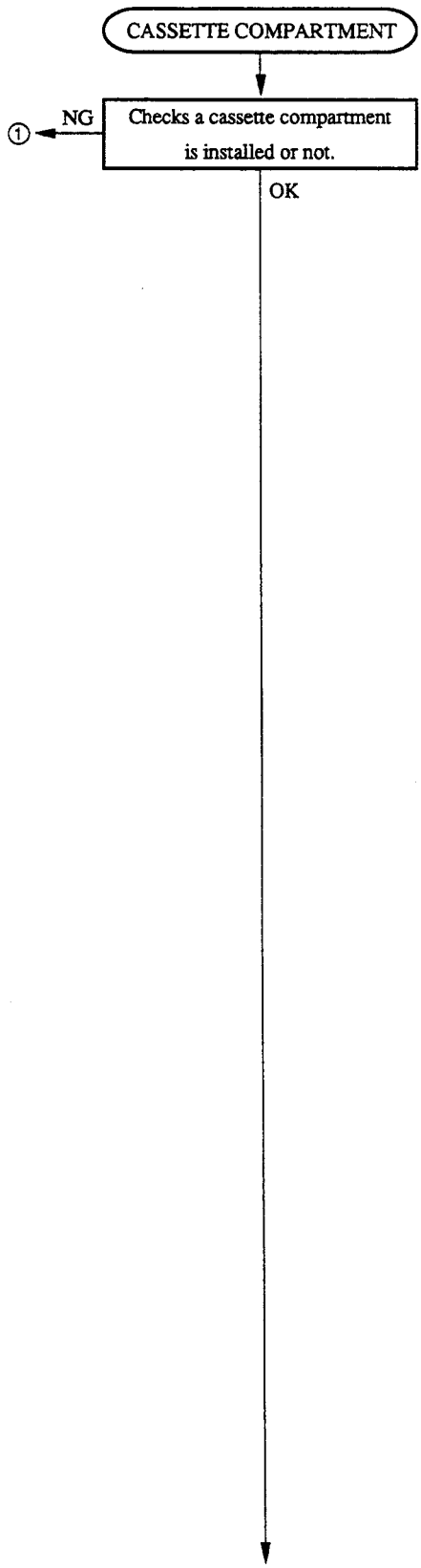


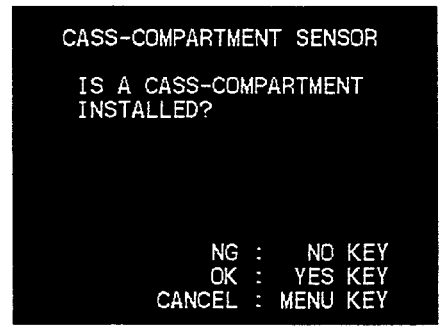
Check : The all seven screws (PWH3 × 8) should be tightened.
There should not be clearance between the MS board and the mechanical parts.

```
CASSETTE ID SENSOR

MS BOARD

CHECK INSTLLATION.


NG :   NO KEY
OK :  YES KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

```
CASSETTE ID SENSOR

MS BOARD

INSTALL IT AGAIN.


NEXT :  (→) KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

(2) CASSETTE COMPARTMENT Diagnosis





- Check that the cassette compartment is installed on the unit and harnesses are connected to the connectors on the cassette compartment.
- If any cassette compartment is not installed, install one. If any harness is not connected to the connectors, connect ones. Then, run the diagnosis.
- When pressing the YES (OK) switch, a cassette compartment sensor checks that a cassette compartment is installed or not. If the sensor decides that the cassette compartment is not installed, proceed to ①.

CASS-COMPARTMENT SENSOR
DISCONTINE DIAGNOSTICS, POWER OFF AND INSTALL A CASS-COMPARTMENT.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

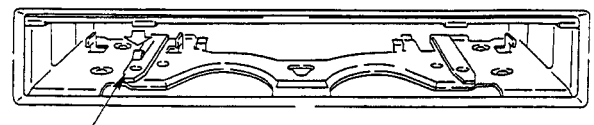
- Check that a cassette compartment is installed on the unit and harnesses are connected to the connectors.

Continues to the next page.

② NG ← Checks the operation of the LARGE/SMALL switch.

OK

* Lift up the cassette window by hand.



LARGE/SMALL SWITCH

CASS-COMPARTMENT SENSOR

CASSETTE SIZE SWITCH

PRESS AND CHECK IT.

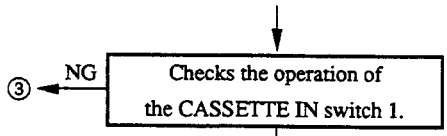
SMALL IN

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

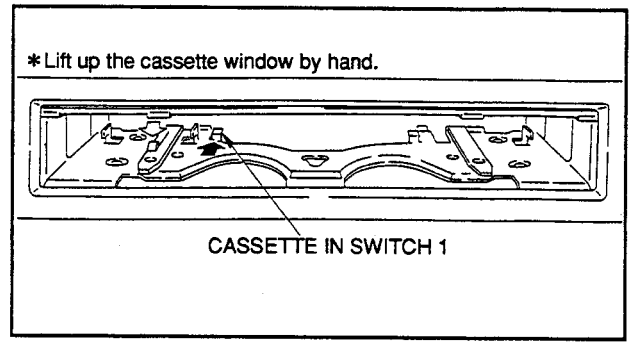
<How to decide>

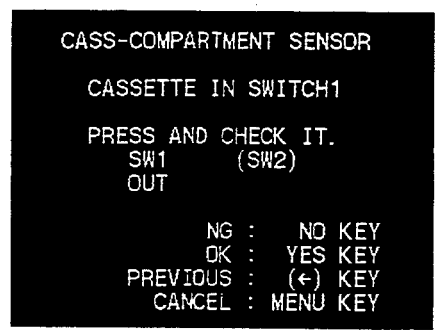
	Not pressing by hand	Pressing by hand	Decision	
Display	SMALL IN	LARGE IN	OK	
	SMALL IN	SMALL IN	NG	NG ②
	LARGE IN	LARGE IN	NG	

4-54 (1800/1800P/1600/1600P)
4-52 (1400/1400P/1200/1200P)



OK

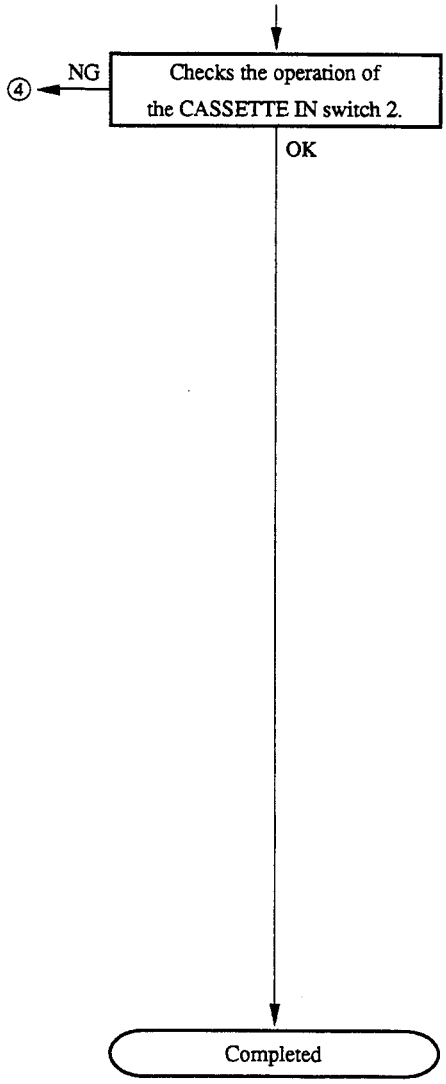


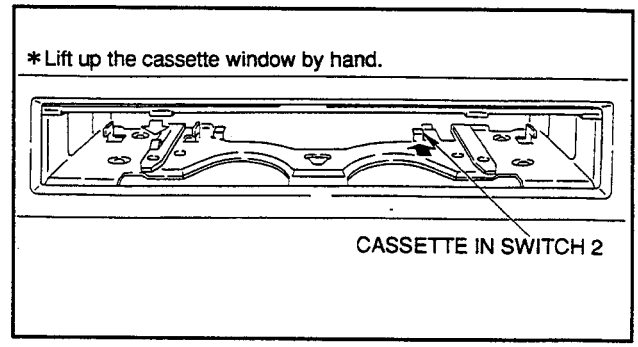


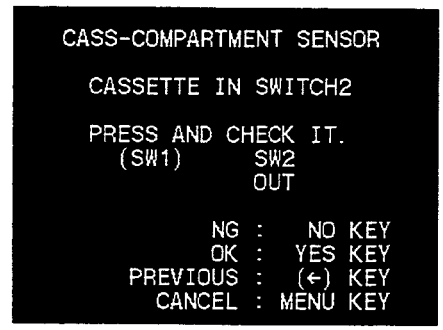
<How to decide>

	Not pressing by hand	Pressing by hand	Decision	
Display	OUT	IN	OK	
	OUT	OUT	NG	NG ③
	IN	IN	NG	

Continues to the next page.

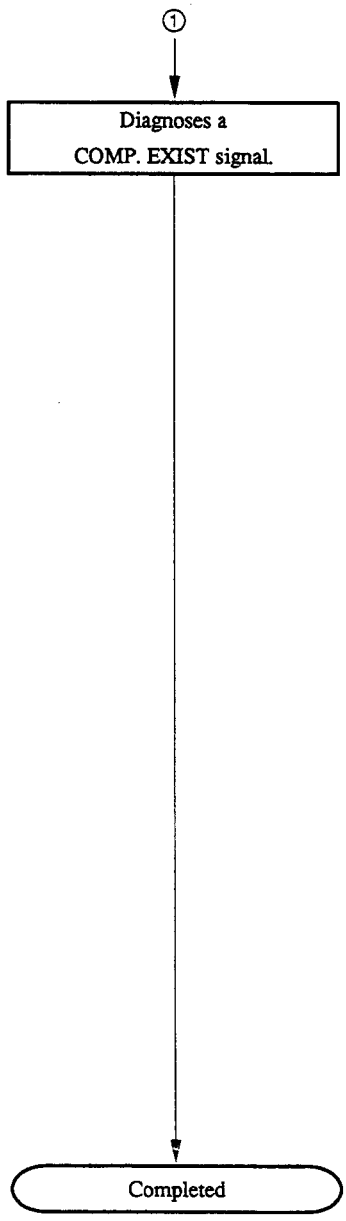






<How to decide>

	Not pressing by hand	Pressing by hand	Decision	
Display	OUT	IN	OK	
	OUT	OUT	NG	NG ④
	IN	IN	NG	



- When a cassette compartment sensor decides that a cassette compartment is not installed, in spite that the cassette compartment is surely installed.

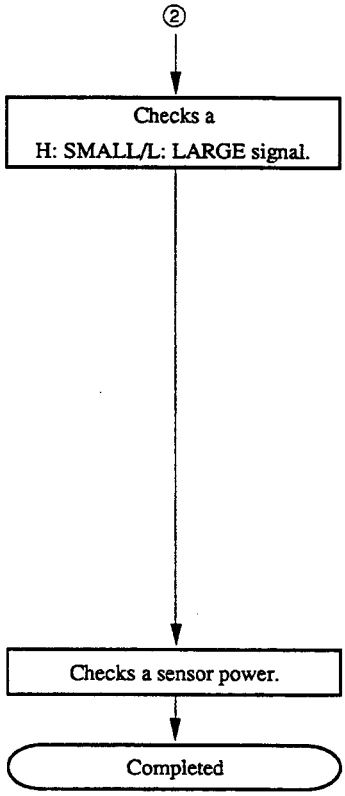
```
CASS-COMPARTMENT SENSOR

· CN930-6/CASS-COMP.
                    ~ GND
 IS THE POINTS SHORTED?


          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :   (←) KEY
      CANCEL : MENU KEY
```

- Stop the diagnosis and turn off the power. Then, check that between pin 6 of CN930 on the CASS-COMP. and GND on the mechanical chassis is shorted by using a tester and so on.
  After checking, turn on the power and continue the diagnosis.

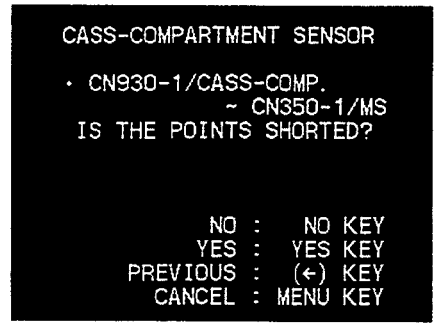
```
CASS-COMPARTMENT SENSOR

· CN930-6/CASS-COMP.
            ~ CN350-6/MS
 IS THE POINTS SHORTED?


          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :   (←) KEY
      CANCEL : MENU KEY
```

  - CN350/MS-39 (L-5)

- Stop the diagnosis and turn off the power. Then, remove the DR board and check the connection by using a tester and so on.
  After checking, install the DR board and turn on the power. Then, continue the diagnosis.
  Shorted : YES key
  Not shorted : No key

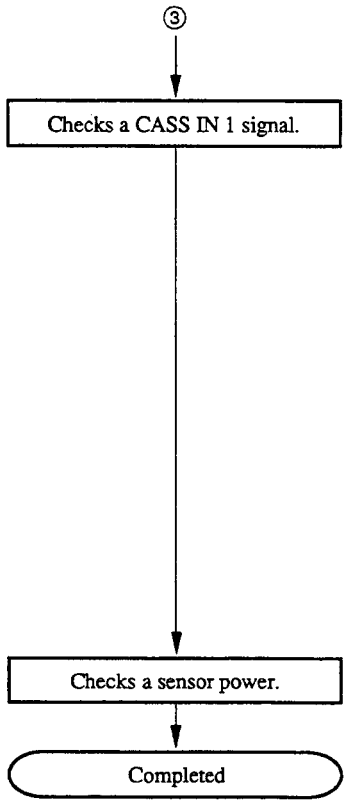


- With using both Auto (Input state of port) and Manual (Input of switch), continue the diagnosis.

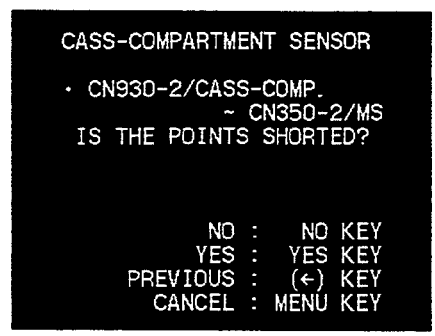


- CN350/MS-39 (L-5)

- Stop the diagnosis and turn off the power. Then, remove the DR board and check the connection by using a tester and so on.
  After checking, install the DR board and turn on the power. Then, continue the diagnosis.

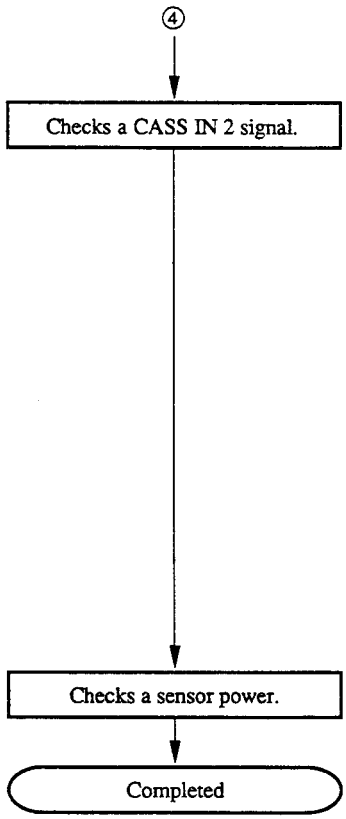


- With using both Auto (Input state of port) and Manual (Input of switch), continue the diagnosis.

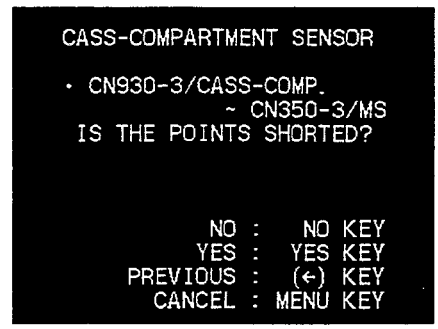


- CN350/MS-39 (L-5)

- Stop the diagnosis and turn off the power. Then, remove the DR board and check the connection by using a tester and so on.
  After checking, install the DR board and turn on the power. Then, continue the diagnosis.



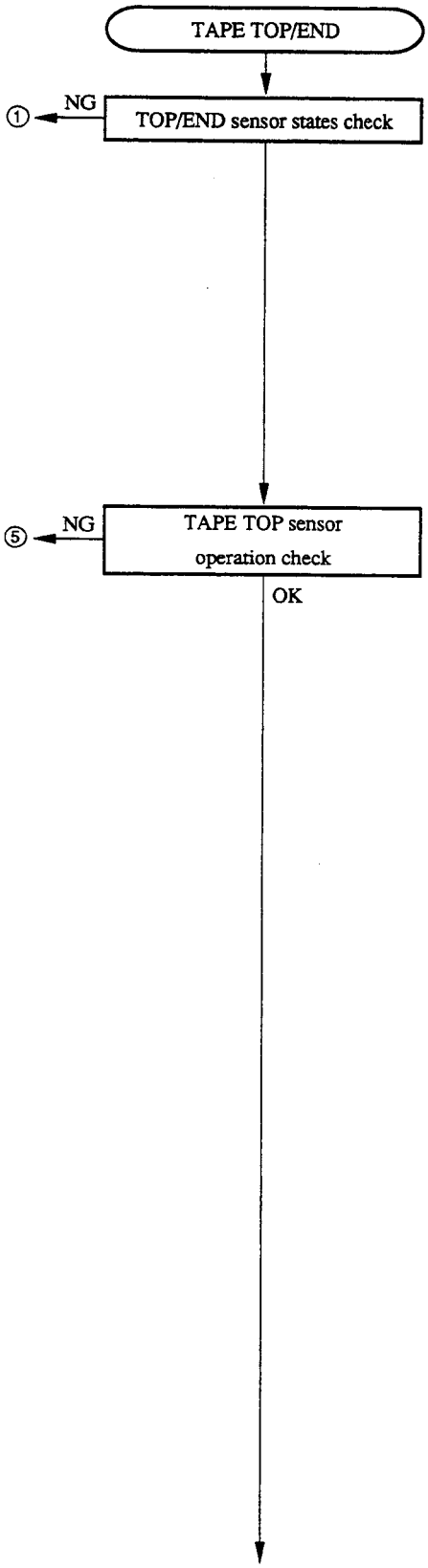
- With using both Auto (Input state of port) and Manual (Input of switch), continue the diagnosis.



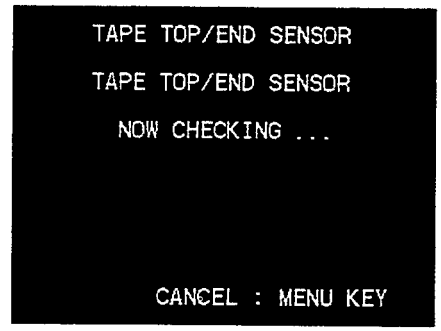
- CN350/MS-39 (L-5)

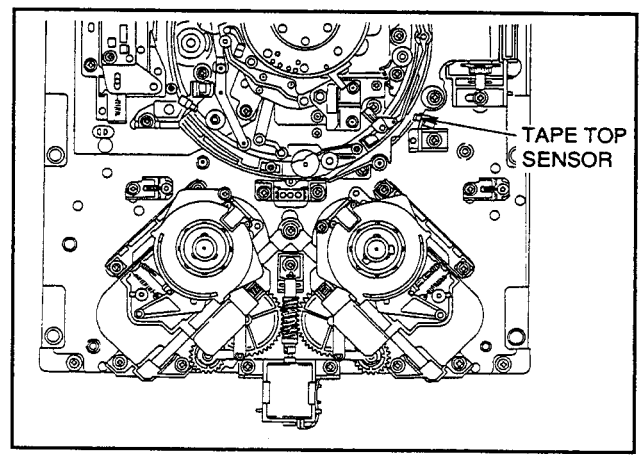
- Stop the diagnosis and turn off the power. Then, remove the DR board and check the connection by using a tester and so on.
  After checking, install the DR board and turn on the power. Then, continue the diagnosis.

(3) TAPE TOP/END Diagnosis

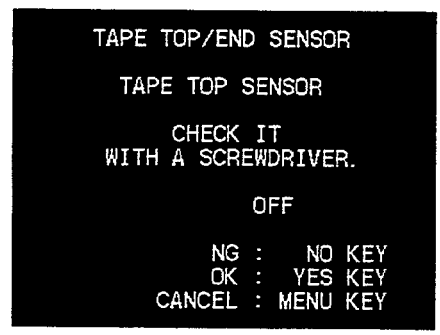


- The unit checks automatically.





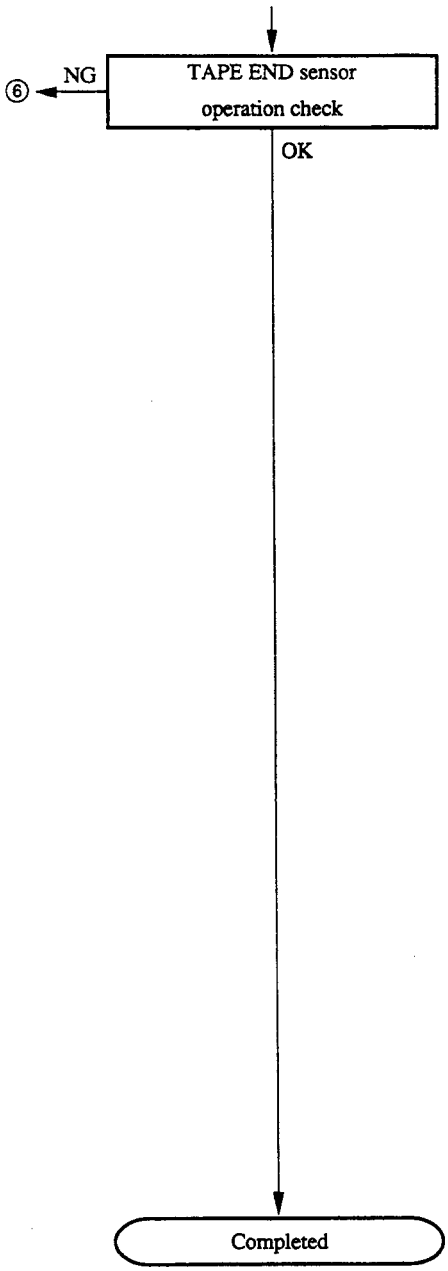
- Close a screwdriver to the TAPE TOP sensor.

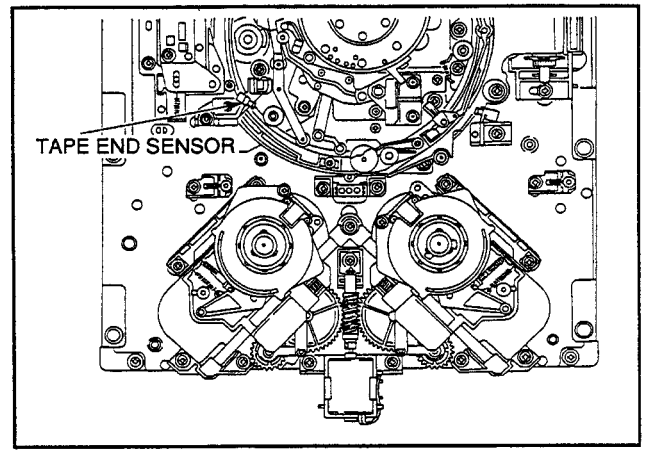


<How to decide>

	Not touching a screwdriver to tape top sensor	Touching a screwdriver to tape top sensor	Decision	
Display	OFF	ON	OK	
	OFF	OFF	NG	NG ⑤
	ON	ON	NG	

4-60(1800/1800P/1600/1600P)
4-58(1400/1400P/1200/1200P)

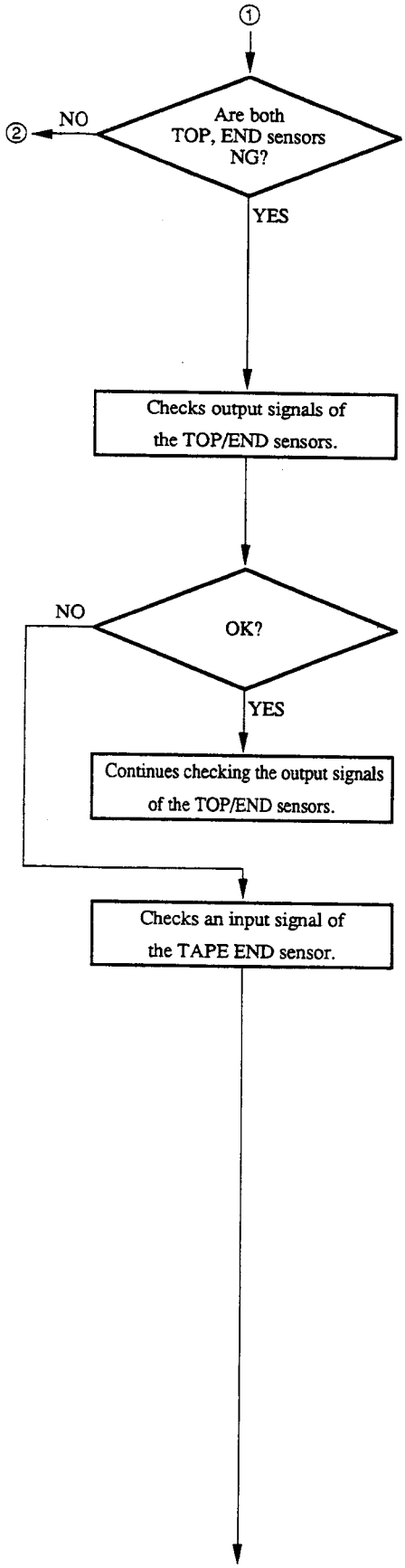


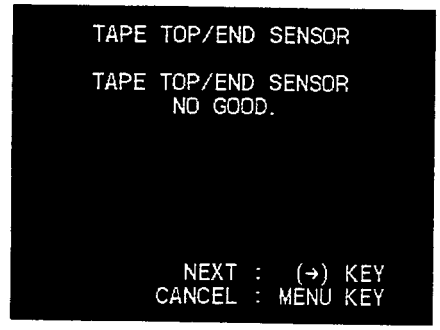


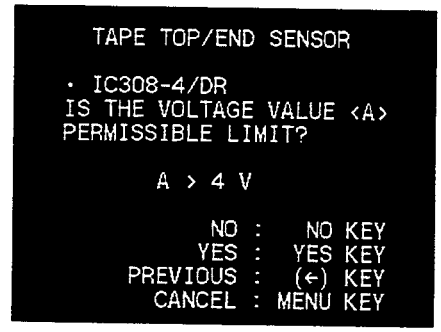
- Close a screwdriver to the TAPE END sensor.

<How to decide>

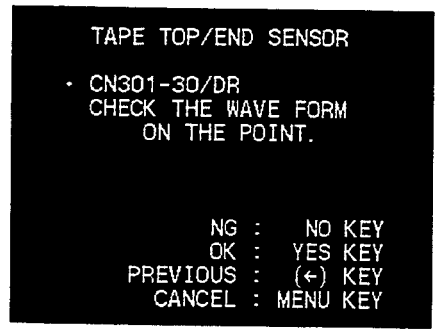
	Not touching a screwdriver to tape end sensor	Touching a screwdriver to tape end sensor	Decision	
Display	OFF	ON	OK	
	OFF	OFF	NG	NG ⑥
	ON	ON	NG	



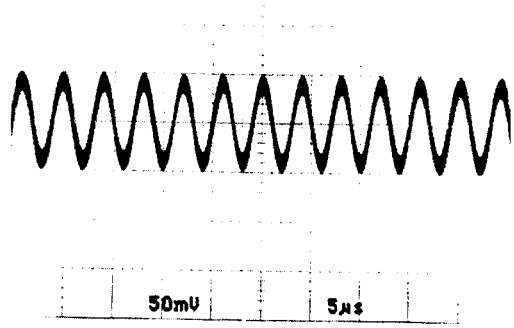




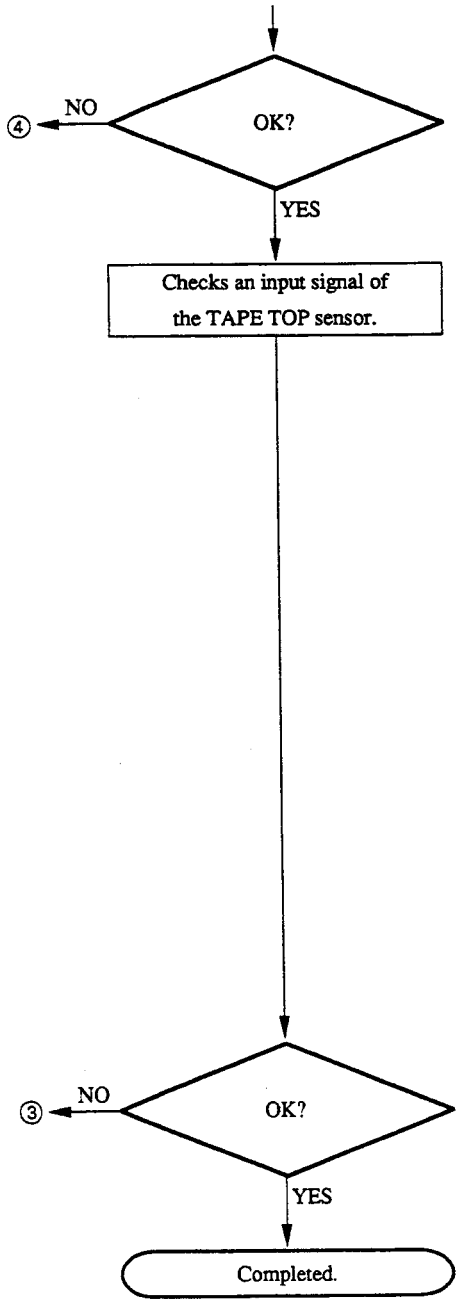
• IC308/DR-214 (E-5)

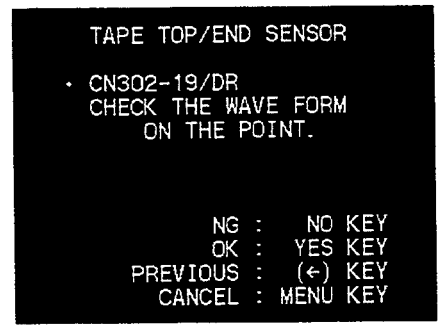


• CN301-30/DR-214 (C-5) waveform

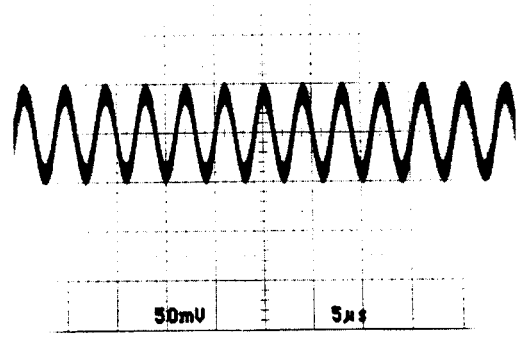


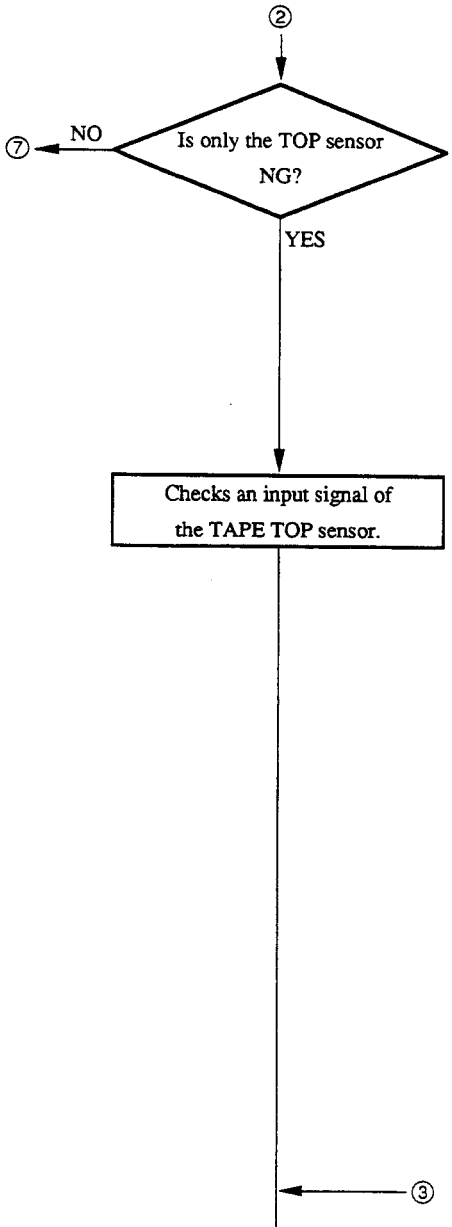
4-62 (1800/1800P/1600/1600P)
4-60 (1400/1400P/1200/1200P)

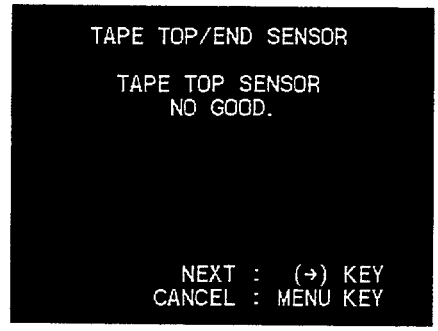


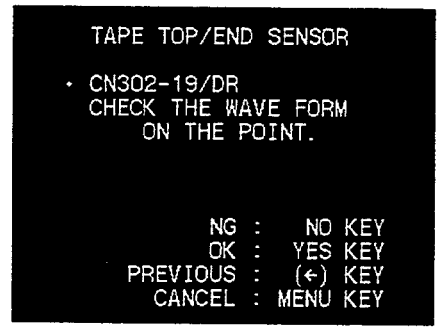


• CN302-19/DR-214 (H-5) waveform

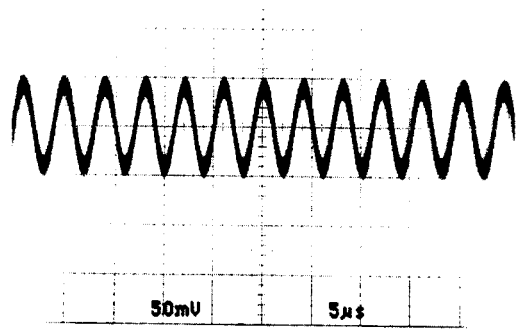




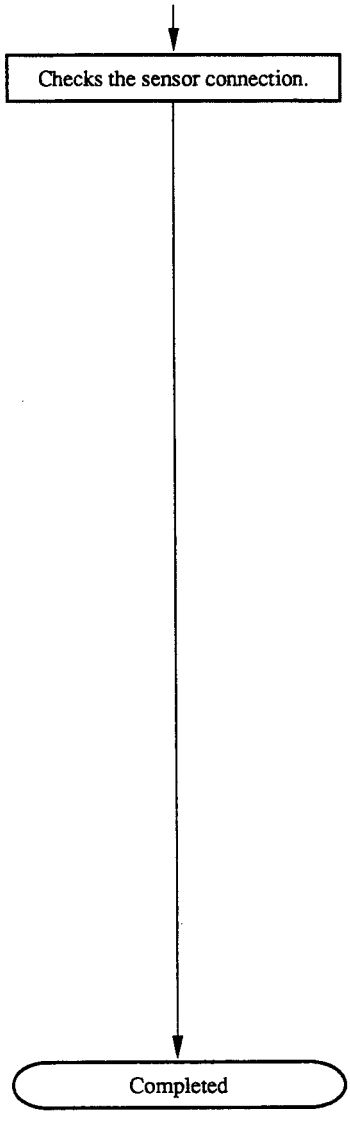




• CN302-19/DR-214 (H-5) waveform



4-64 (1800/1800P/1600/1600P)
4-62 (1400/1400P/1200/1200P)




```
TAPE TOP/END SENSOR

• CN939-1/TOP SENSOR
        ~ CN302-19/DR
IS THE POINTS SHORTED?


        NO :   NO KEY
       YES :  YES KEY
  PREVIOUS :   (←) KEY
    CANCEL : MENU KEY
```

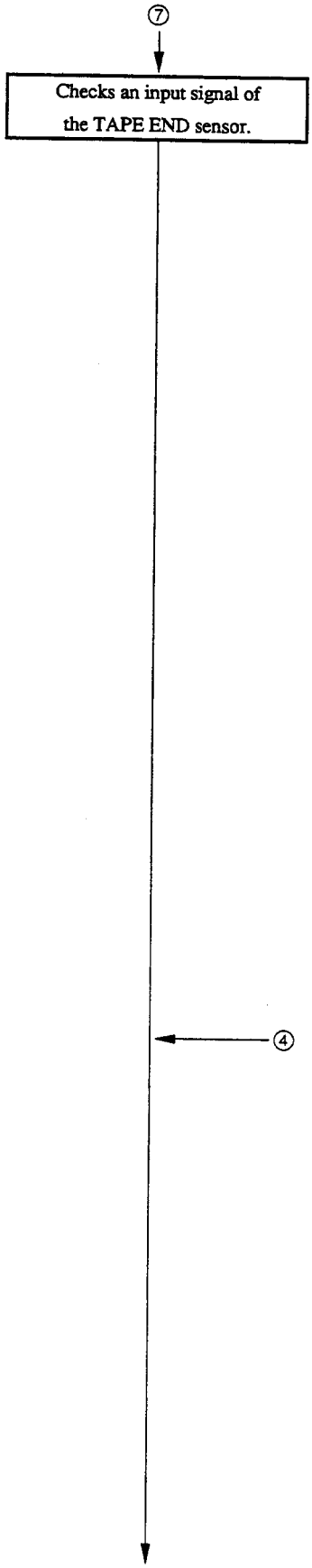
- CN302/DR-214 (H-5)

- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.

```
TAPE TOP/END SENSOR

• CN939-2/TOP SENSOR
        ~ CN302-18/DR
IS THE POINTS SHORTED?


        NO :   NO KEY
       YES :  YES KEY
  PREVIOUS :   (←) KEY
    CANCEL : MENU KEY
```

- CN302/DR-214 (H-5)

- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.



TAPE TOP/END SENSOR

TAPE END SENSOR
NO GOOD.

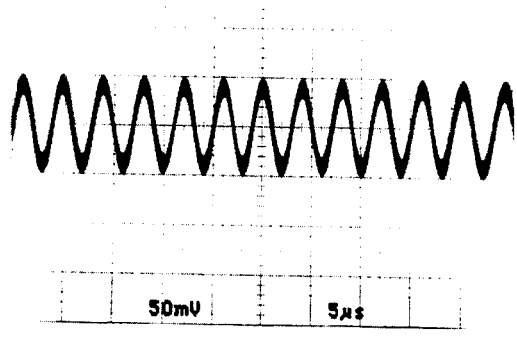
NEXT : (→) KEY
CANCEL : MENU KEY

TAPE TOP/END SENSOR

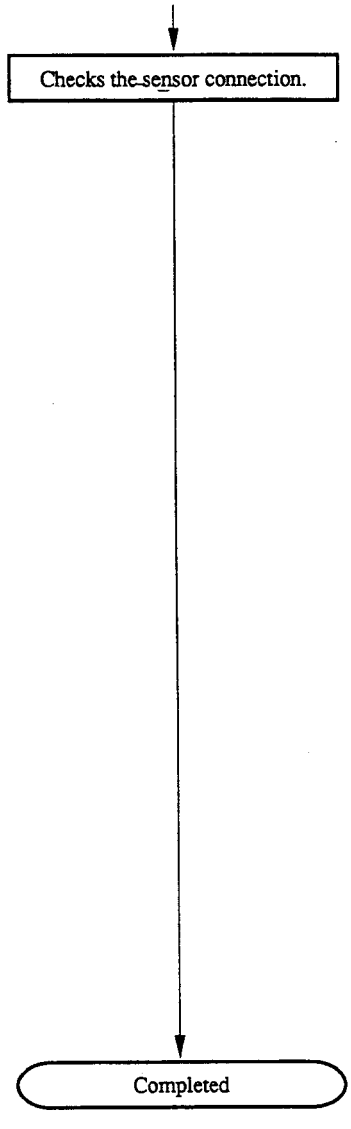
• CN301-30/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN301-30/DR-214 (C-5) waveform



4-66 (1800/1800P/1600/1600P)
4-64 (1400/1400P/1200/1200P)




```
TAPE TOP/END SENSOR

· CN938-1/END SENSOR
        ~ CN301-30/DR
IS THE POINTS SHORTED?


          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :   (←) KEY
      CANCEL : MENU KEY
```

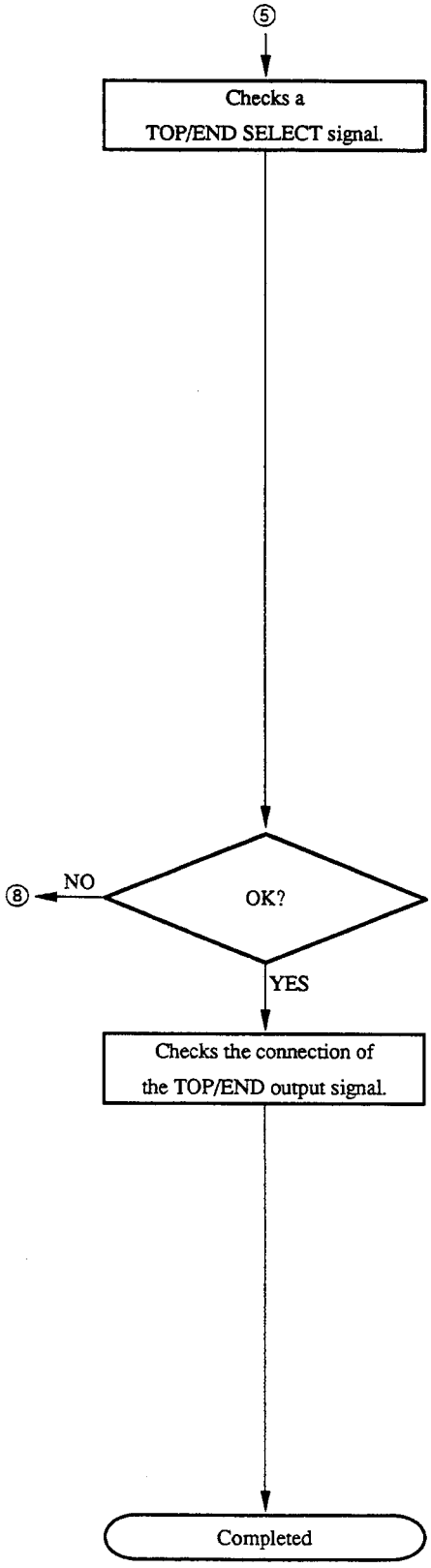
- CN301/DR-214 (C-5)

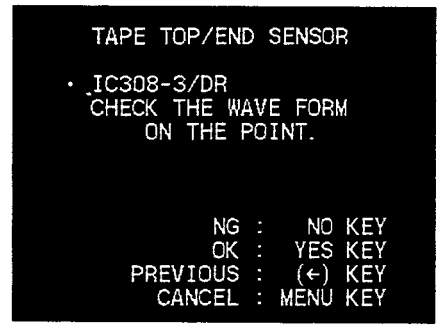
- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.

```
TAPE TOP/END SENSOR

· CN938-2/END SENSOR
        ~ CN301-29/DR
IS THE POINTS SHORTED?


          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :   (←) KEY
      CANCEL : MENU KEY
```

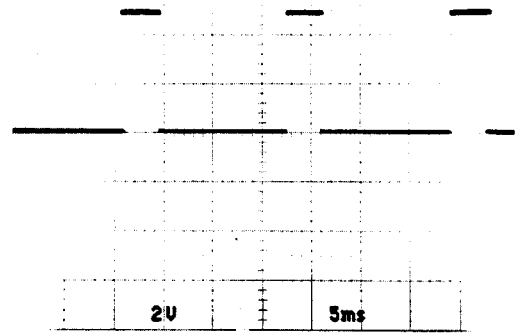
- CN301/DR-214 (C-5)

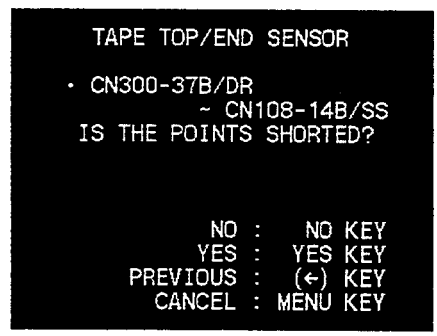
- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.





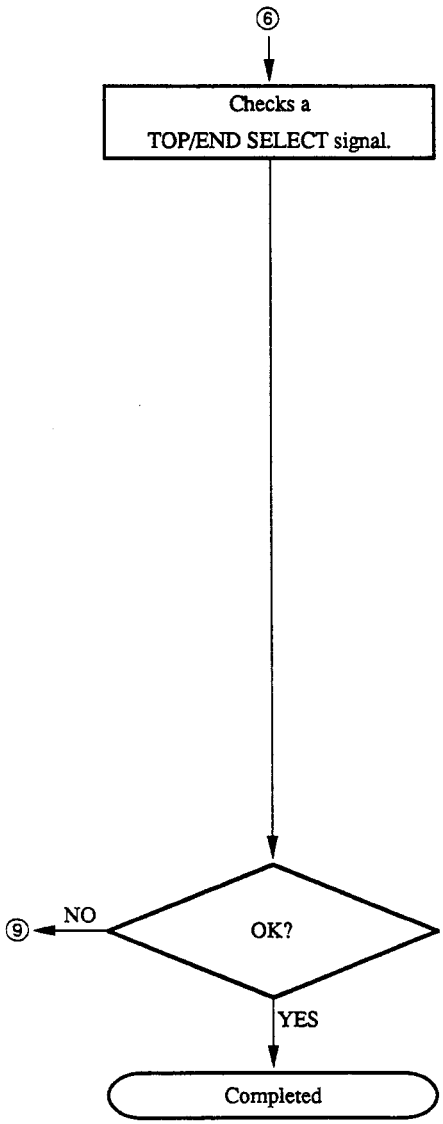
• IC308-3/DR-214 (E-5) waveform

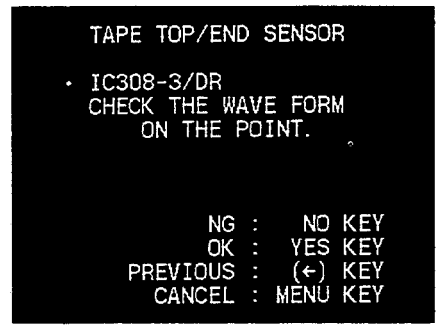




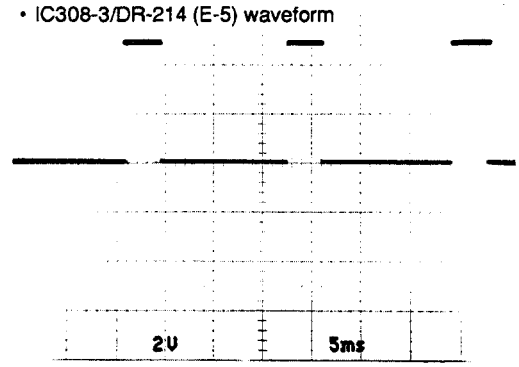
- CN300/DR-214 (H-1)
- CN108/SS-53 (K-6)

- Turn off the power. Then, check the connection using by a tester and so on. After checking, turn on the power and continue the diagnosis.





• IC308-3/DR-214 (E-5) waveform



⑧⑨

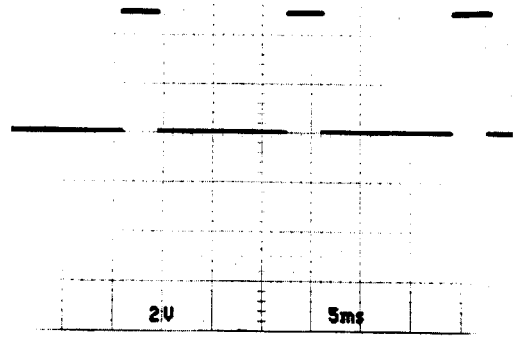
Continues checking of the TOP/END SELECT signal.

TAPE TOP/END SENSOR

• CN300-22B/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN300-22B/DR-214 (H-1) waveform

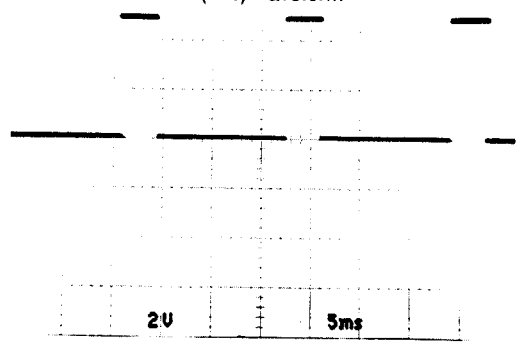


TAPE TOP/END SENSOR

• CN108-7A/SS
CHECK THE WAVE FORM
ON THE POINT.

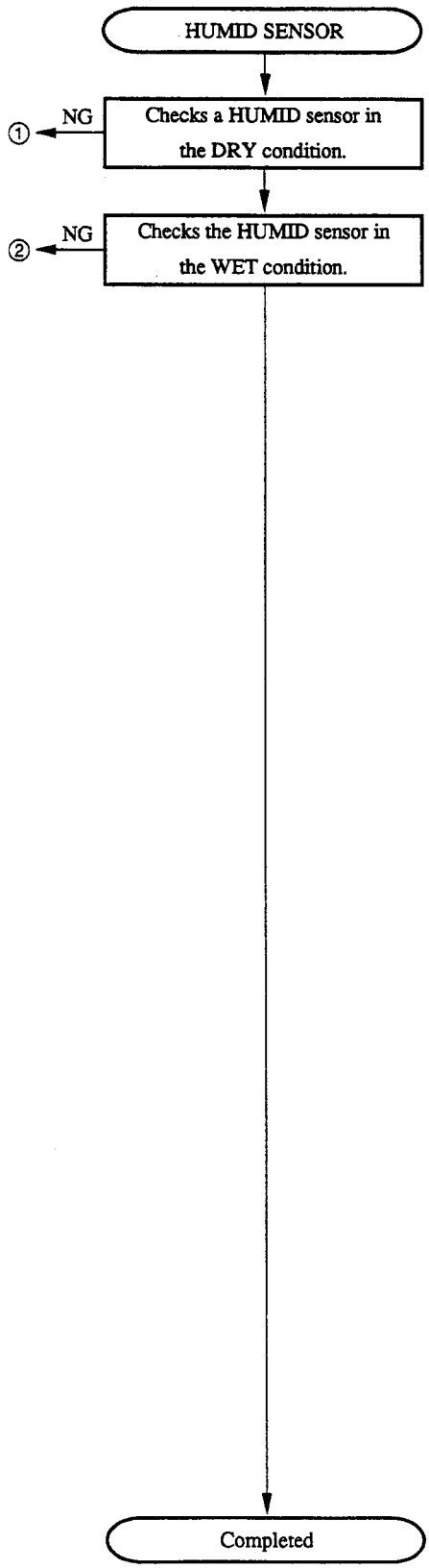
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN108-7A/SS-53 (K-6) waveform

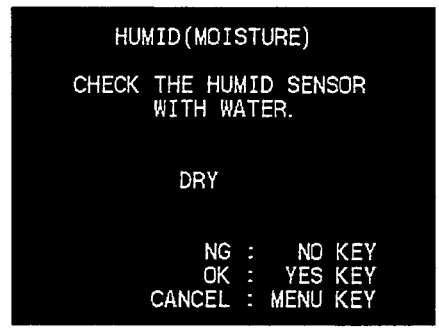


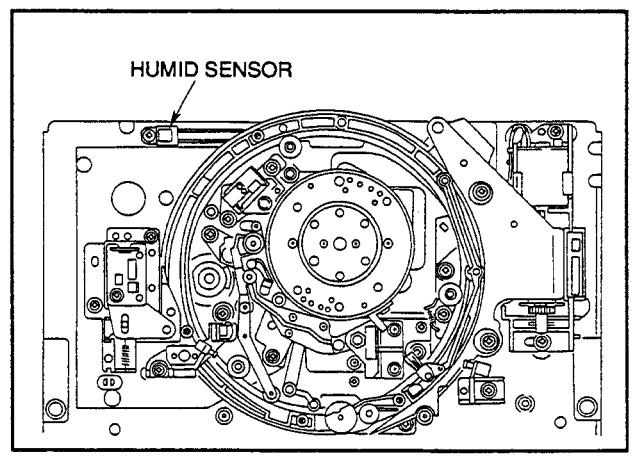
Completed

(4) HUMID Diagnosis



- The unit checks automatically.





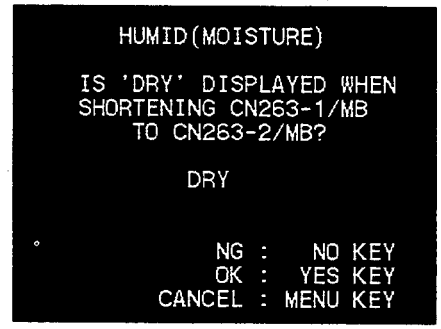
Note : Be sure to use water.
It takes a little to be responded.

- After moistening the SENSOR with water, it takes a lot of time to be dry.
  In the case that the above is displayed, wait until the sensor becomes dry and the display changes to DRY, or turn off the power and dry the SENSOR.

①

Checks the operation of the circuit.

NG

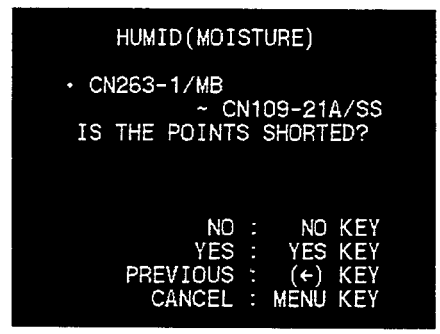


- CN263/MB-471 (A-3) ✱UVW-1200/1200P: CN234

- When the above two pins are shorted, this unit is designed so that the circuit becomes DRY.

Checks the connection of a DEW DET (X) signal.

OK

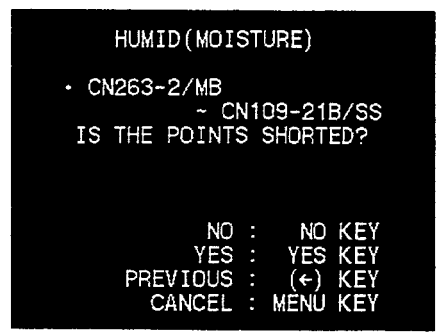


- CN263/MB-471 (A-3) ✱UVW-1200/1200P: CN234
  CN109/SS-53 (C-6)

- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.

Checks the connection of a DEW DET (Y) signal.

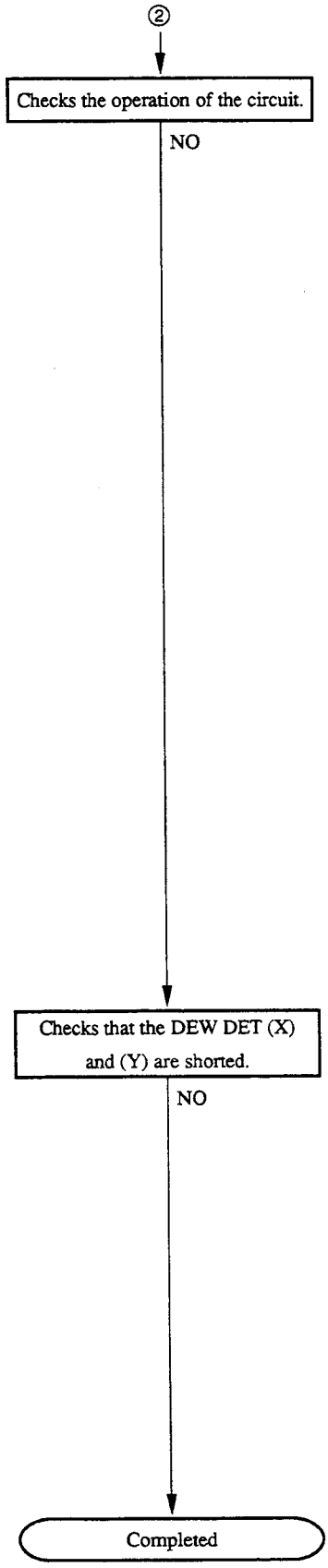
OK

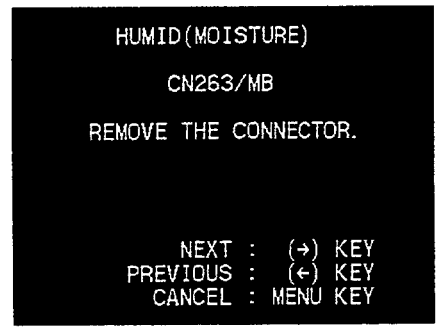


- CN263/MB-471 (A-3) ✱UVW-1200/1200P: CN234
  CN109/SS-53 (C-6)

- Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
  After checking, turn on the power and continue the diagnosis.

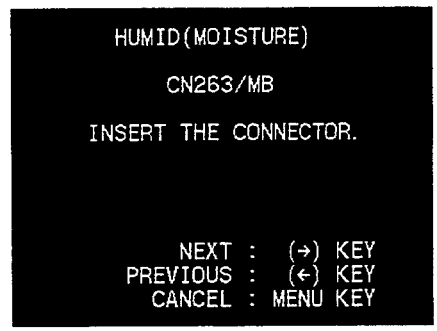
- The probable cause is that a DEW COMPARATOR on the SS board is defective.





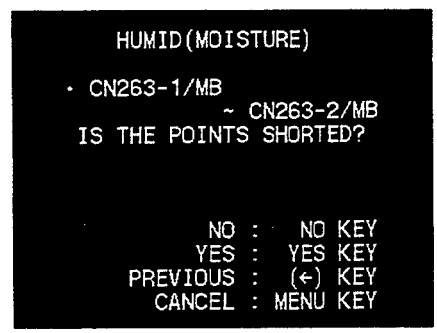
• CN263/MB-471 (A-3) ＊UVW-1200/1200P: CN234

• Disconnect a harness from the connector on the MB board.
After disconnecting, press the (→) key.



• CN263/MB-471 (A-3) ＊UVW-1200/1200P: CN234

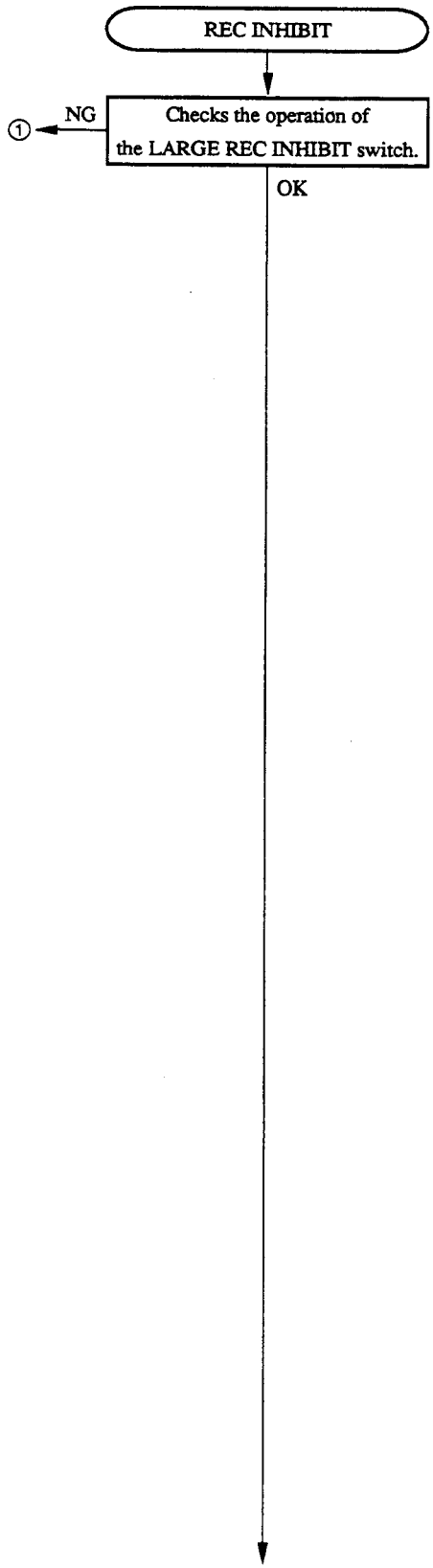
• Connect the disconnected harness to its original position.
After connecting, press the (→) key.

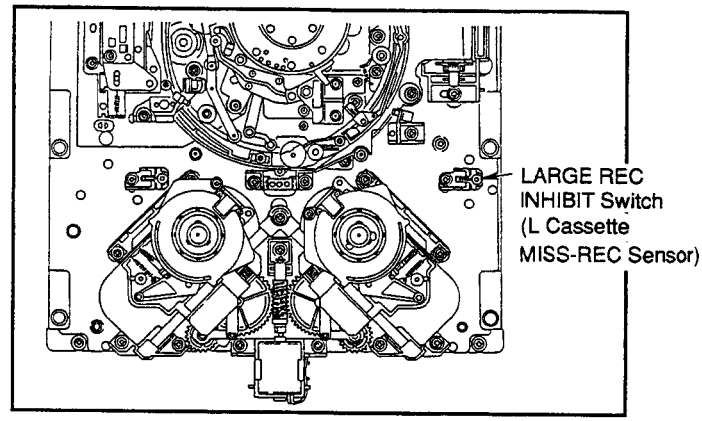


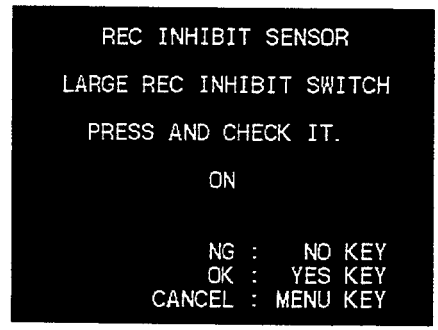
• CN263/MB-471 (A-3) ＊UVW-1200/1200P: CN234

• Stop the diagnosis and turn off the power. Then, check the connection using by a tester and so on.
After checking, connect the connector CN263 (CN234 for UVW-1200/1200P) to the MB board and turn on the power. Then, continue the diagnosis.

(5) **REC INHIBIT Diagnosis**





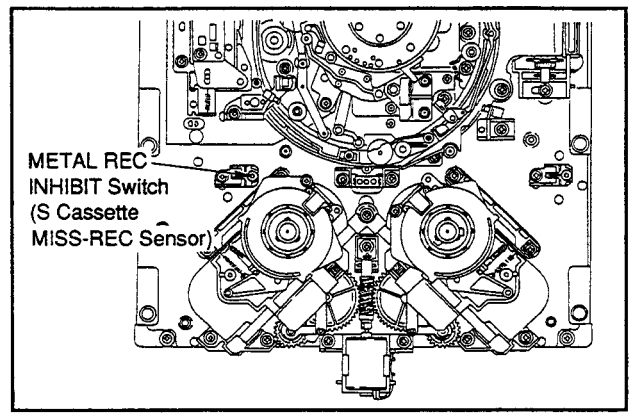


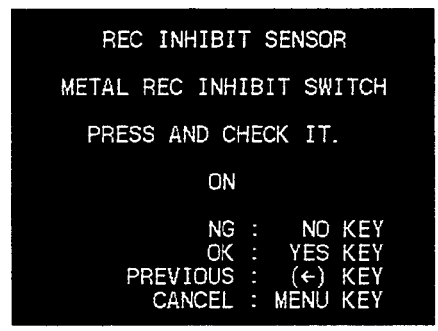
<How to decide>

	Not pressing by hand	Pressing by hand	Decision	
Display	ON	OFF	OK	
	ON	ON	NG	NG ①
	OFF	OFF	NG	

② ← NG | Checks the operation of the METAL REC INHIBIT switch.

OK





<How to decide>

	Not pressing by hand	Pressing by hand	Decision	
Display	ON	OFF	OK	
	ON	ON	NG	NG ②
	OFF	OFF	NG	

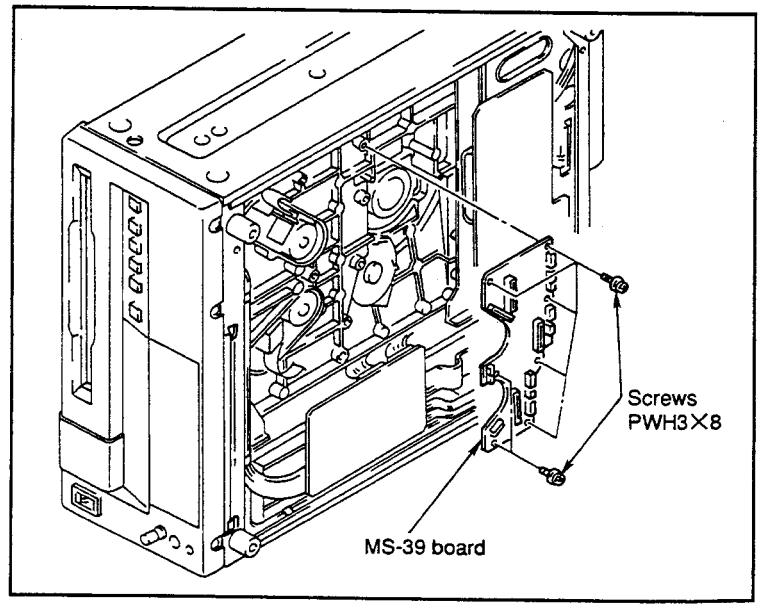
Continues to the next page.

Checks the installation of the MS board.

```
REC INHIBIT SENSOR

MS BOARD

CHECK INSTLLATION.


        NG :   NO KEY
        OK :  YES KEY
  PREVIOUS :  (←) KEY
    CANCEL : MENU KEY
```

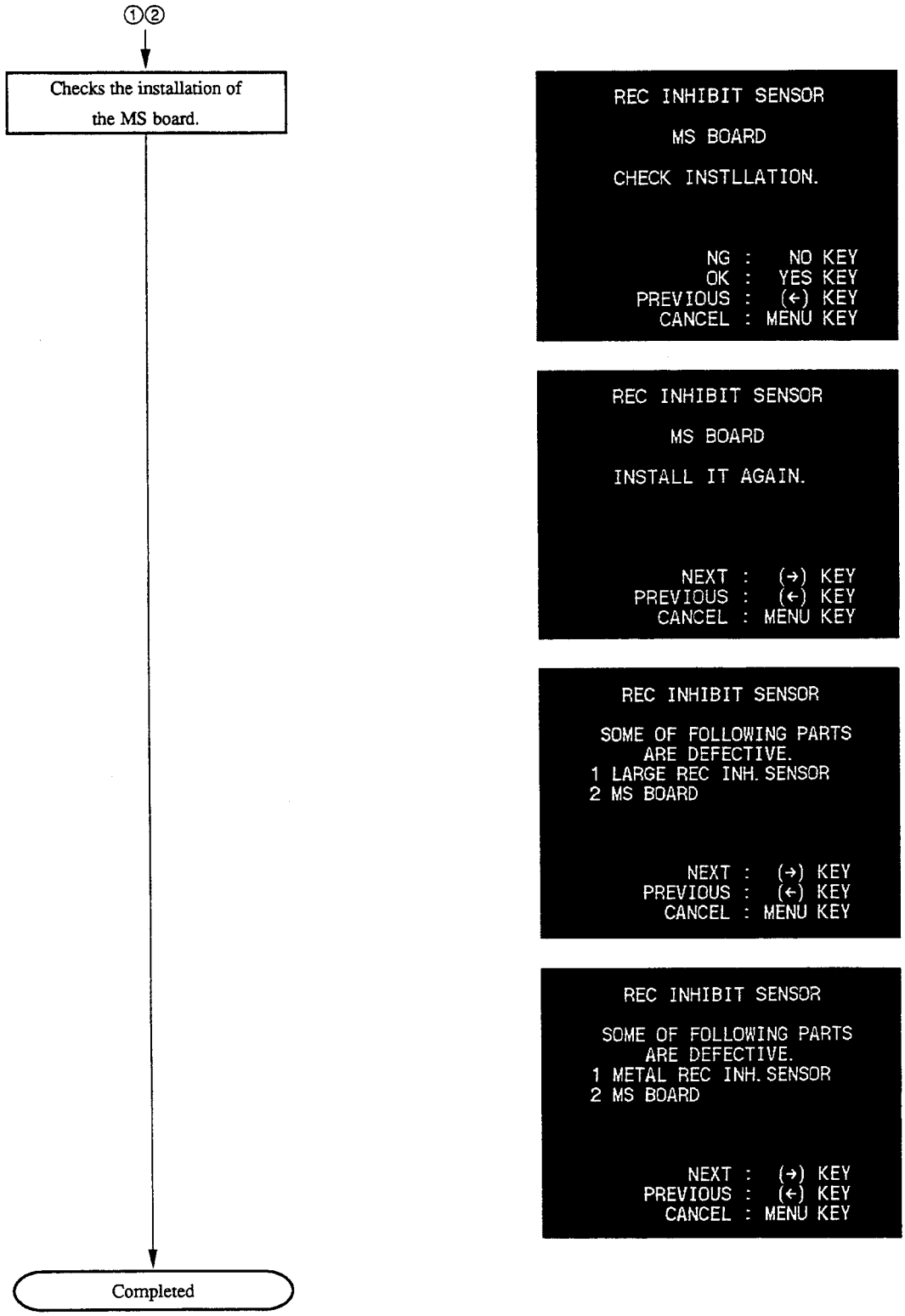
```
REC INHIBIT SENSOR

MS BOARD

INSTALL IT AGAIN.


      NEXT :  (→) KEY
  PREVIOUS :  (←) KEY
    CANCEL : MENU KEY
```

• Installation of the MS-39 board

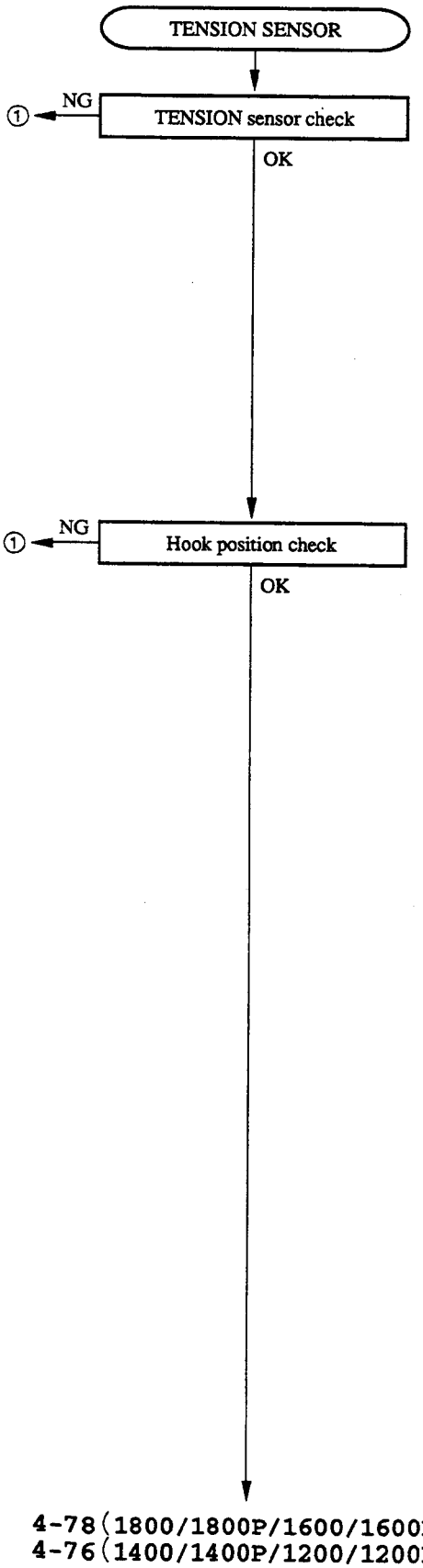


Check : The all seven screws (PWH3×28) should be tightened.
There should not be clearance between the MS board and the mechanical parts.

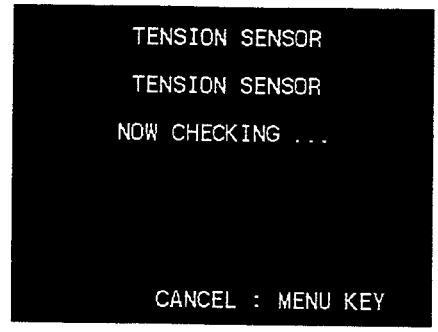
Completed


①②
Checks the installation of the MS board.
REC INHIBIT SENSOR
MS BOARD
CHECK INSTLLATION.
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
REC INHIBIT SENSOR
MS BOARD
INSTALL IT AGAIN.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
REC INHIBIT SENSOR
SOME OF FOLLOWING PARTS ARE DEFECTIVE.
1 LARGE REC INH. SENSOR
2 MS BOARD
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
REC INHIBIT SENSOR
SOME OF FOLLOWING PARTS ARE DEFECTIVE.
1 METAL REC INH. SENSOR
2 MS BOARD
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
Completed

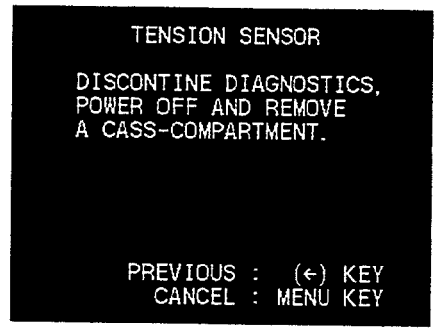
(6) TENSION SENSOR Diagnosis



4-78(1800/1800P/1600/1600P)
4-76(1400/1400P/1200/1200P)

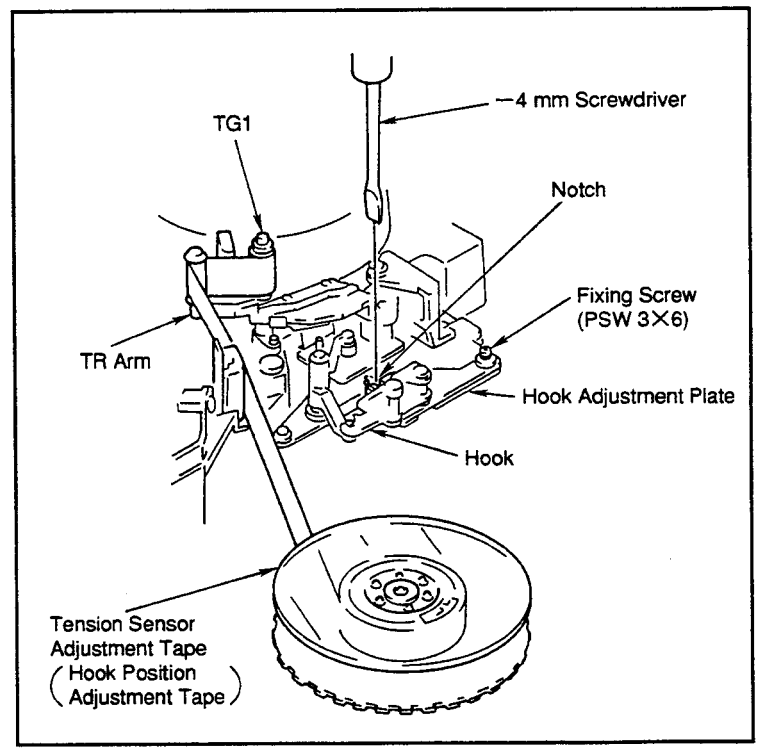


- Threading is automatically performed. Check that the output of a tension sensor is changed.



- Stop the diagnosis and turn off the power. Then, remove a cassette compartment. After removing, turn on the power and continue the diagnosis.

```
TENSION SENSOR

FIT THE HOOK-POSITION-
ADJUSTMENT-TAPE INTO
S-REEL AND TG-1


          NEXT :  (→) KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

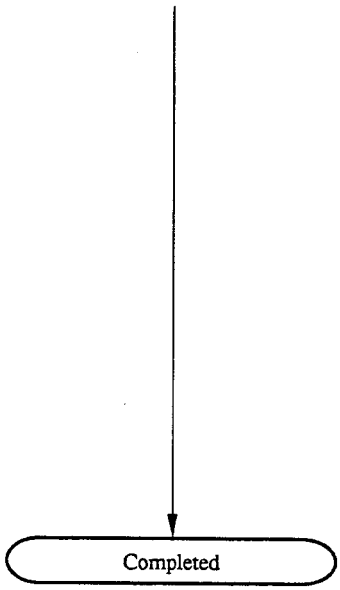


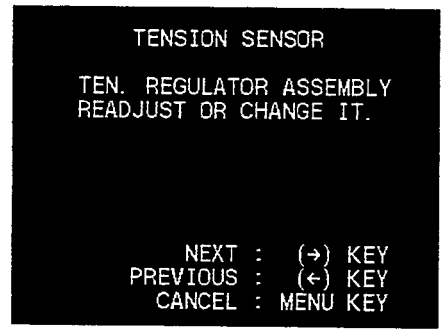
- Put the reel of the tension sensor adjustment tape on the S reel table. Then, hook the loop of the tape-top on the TG-1.
  Place the tape in the tape path condition as shown in the figure.

```
TENSION SENSOR

CHECK THE DISPLAY
INDICATING AN 'OK'?

OK


          NO :   NO KEY
         YES :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

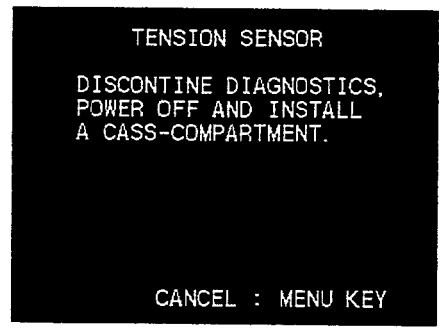
- Check the the display is OK.

Continues to the next page.





- In case of re-adjustment, refer to section 6-38-1 and 6-38-2 in Service Manual Vol. 1.
  In case of replacement, refer to section 6-36 in Service Manual Vol. 1.
  After adjustment, be sure to save the data in the non-volatile RAM.

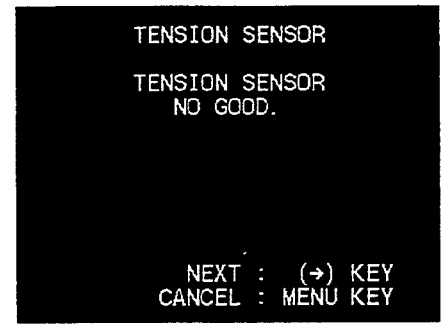


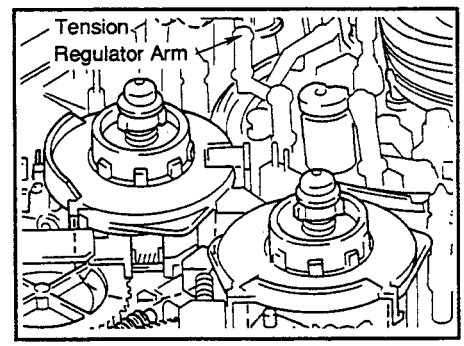
- Stop the diagnosis and turn off the power. Then, install the cassette compartment.

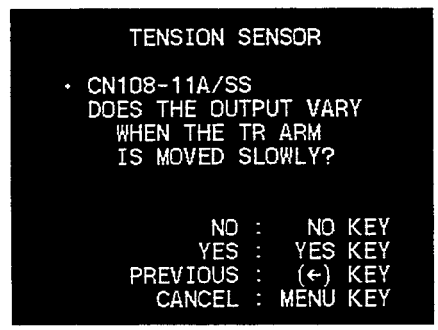
①

Checks an output signal of the S TENSION AMP.

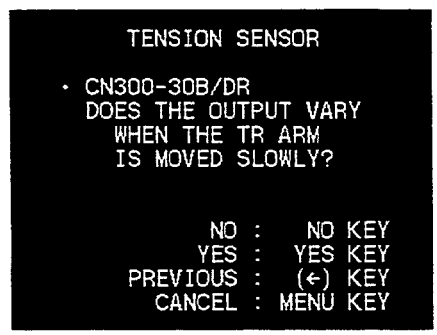
NG







• CN108/SS-53 (K-6)

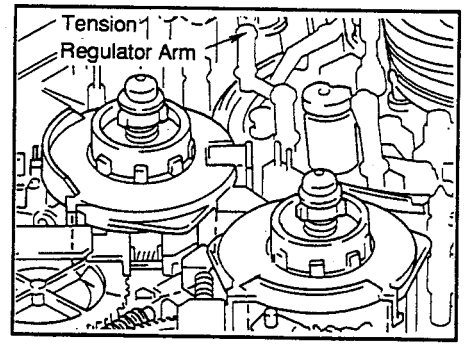


• CN300/DR-214 (H-1)

• Using an oscilloscope and so on, check the voltage at the displayed point is changed by moving the tension regulator arm lightly.
At this time, be careful not to damage the tension regulator arm.

Continues to the next page.

Checks an input signal of the S TENSION.



TENSION SENSOR

・ CN302-11/DR
DOES THE OUTPUT VARY
MORE THAN 5mV WHEN THE
TR ARM IS MOVED SLOWLY?

NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN302/DR-214 (H-5)

TENSION SENSOR

・ CN302-12/DR
DOES THE OUTPUT VARY
MORE THAN 5mV WHEN THE
TR ARM IS MOVED SLOWLY?

NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

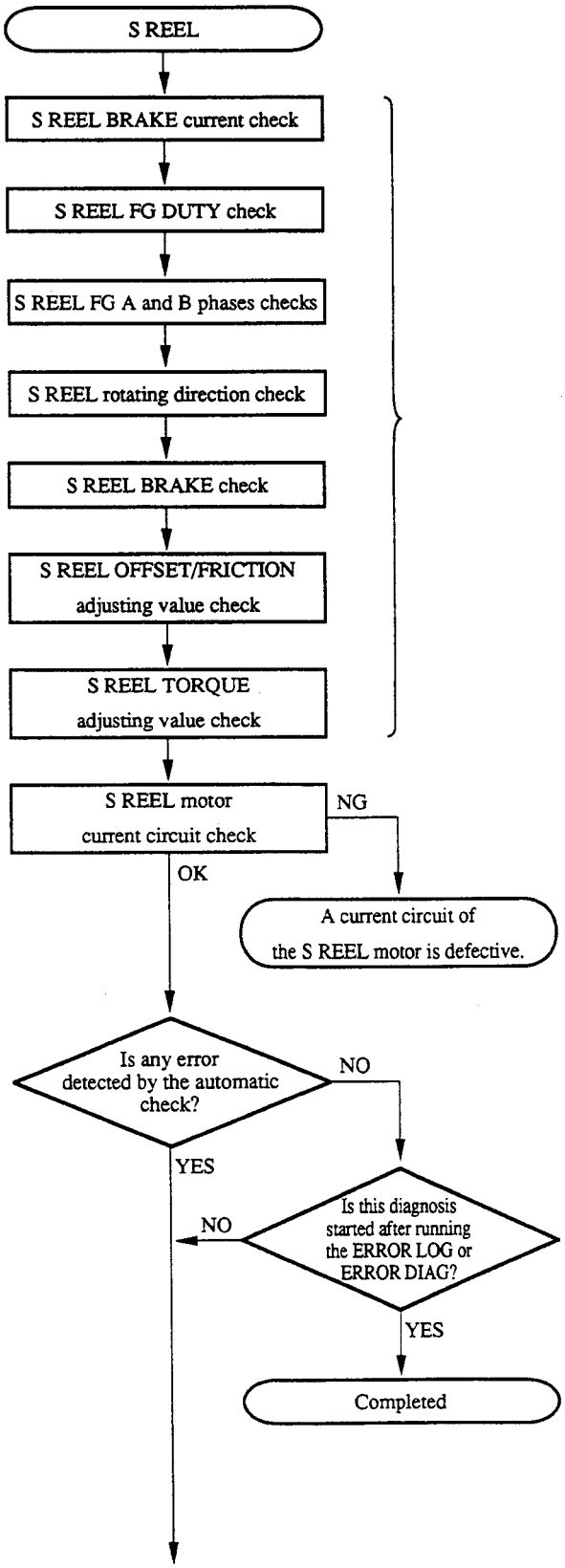
• CN302/DR-214 (H-5)

• Using an oscilloscope and so on, check the voltage at the displayed point is changed by moving the tension regulator arm lightly.
At this time, be careful not to damage the tension regulator arm.

Checks a ADJUST +5 V signal.

Completed

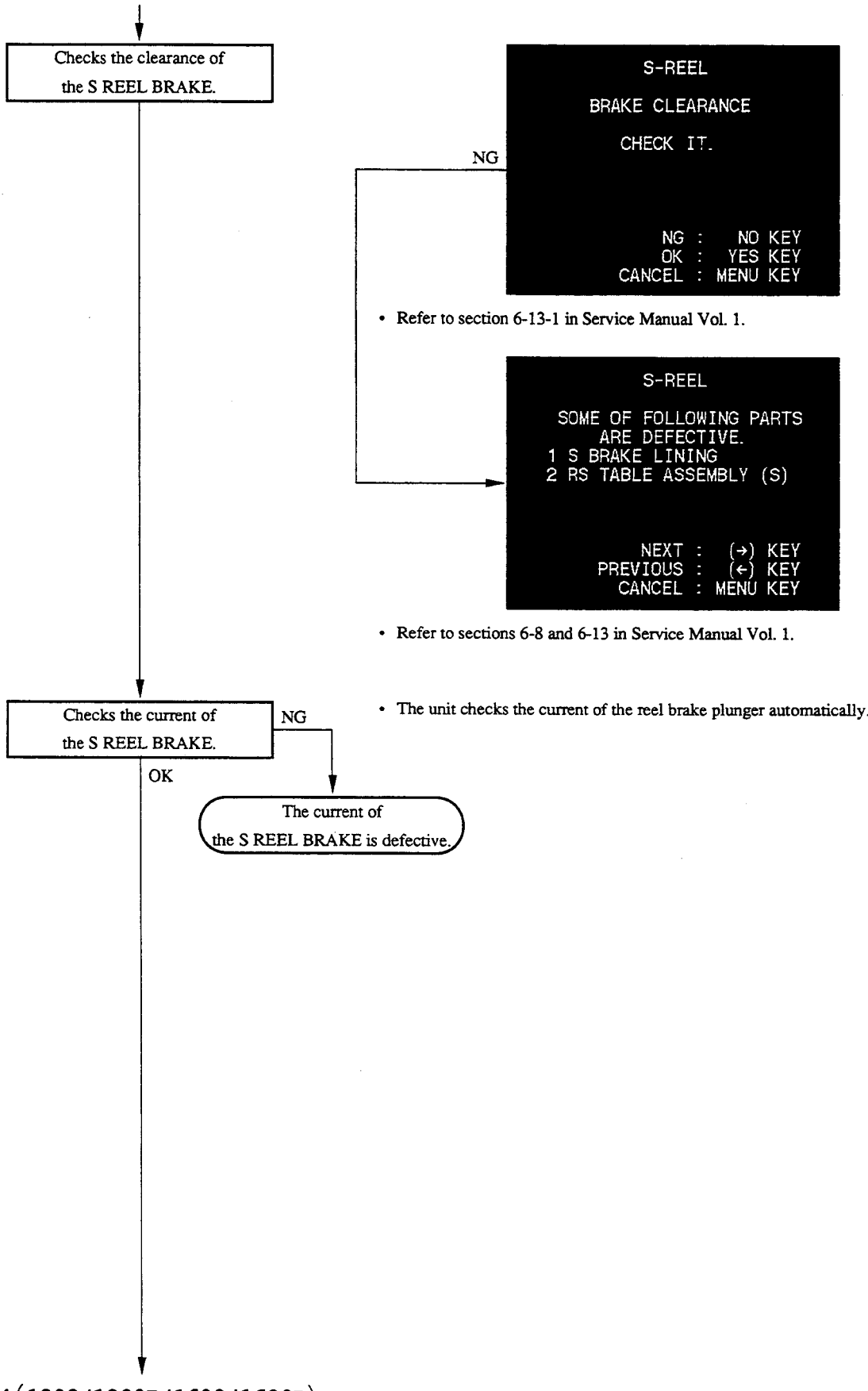
(7) **S REEL Diagnosis**


S REEL
S REEL BRAKE current check
S REEL FG DUTY check
S REEL FG A and B phases checks
S REEL rotating direction check
S REEL BRAKE check
S REEL OFFSET/FRICTION adjusting value check
S REEL TORQUE adjusting value check
S REEL motor current circuit check
NG
OK
A current circuit of the S REEL motor is defective.
Is any error detected by the automatic check?
NO
YES
Is this diagnosis started after running the ERROR LOG or ERROR DIAG?
NO
YES
Completed

- The unit checks automatically.

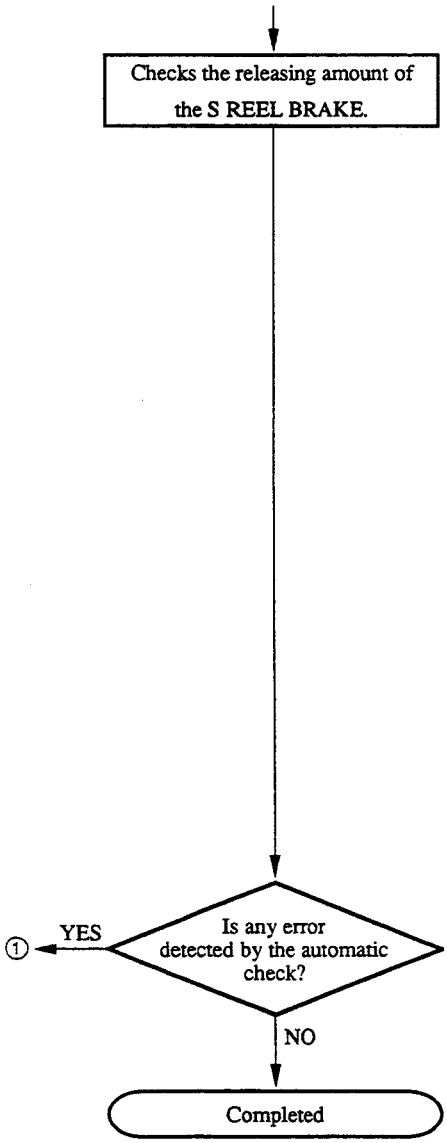
- If the automatic check is completed at this step, after running the ERROR LOG or ERROR DIAG, the check is completed. Then, the diagnosis is proceeded to the next step.

Continues to the next page.



- Refer to section 6-13-1 in Service Manual Vol. 1.
- Refer to sections 6-8 and 6-13 in Service Manual Vol. 1.
- The unit checks the current of the reel brake plunger automatically.

4-84 (1800/1800P/1600/1600P)
4-82 (1400/1400P/1200/1200P)



NG

S-REEL

BRAKE RELEASING AMOUNT

CHECK IT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- Refer to section 6-13-2 in Service Manual Vol. 1.

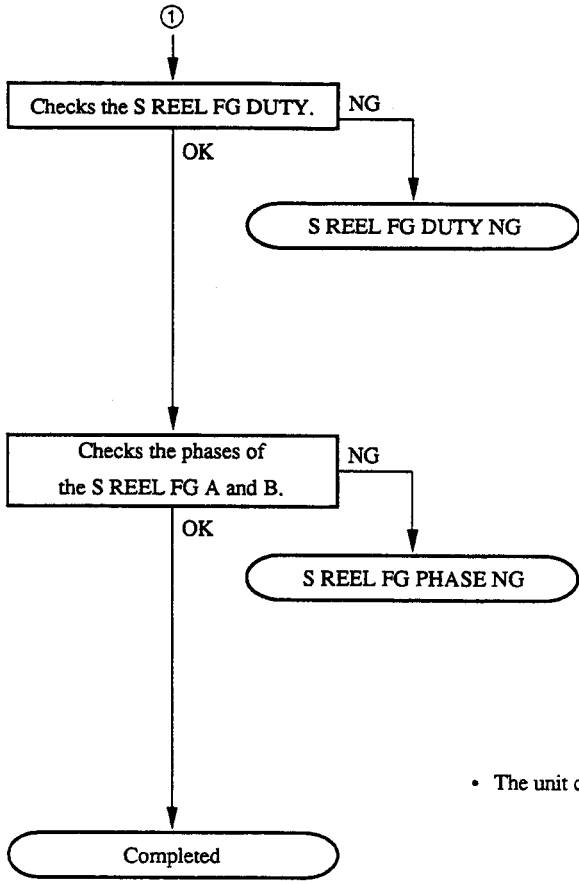
S-REEL

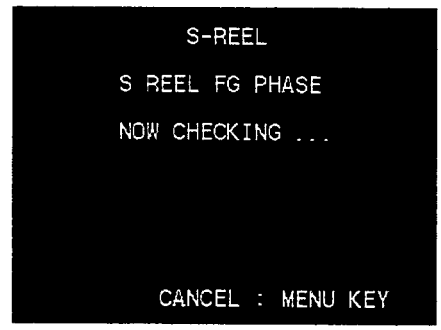
FOLLOWING PART IS DEFECTIVE.

- RS TABLE ASSEMBLY (S)

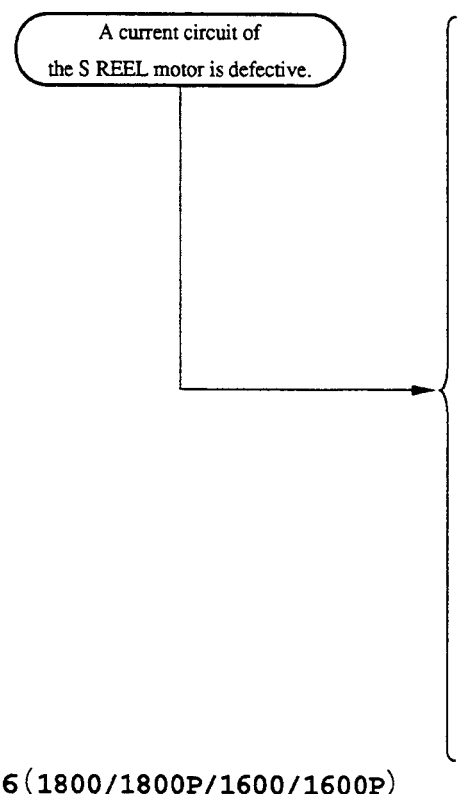
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

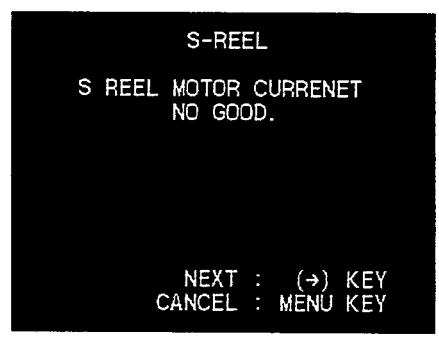
- Refer to section 6-8 in Service Manual Vol. 1.

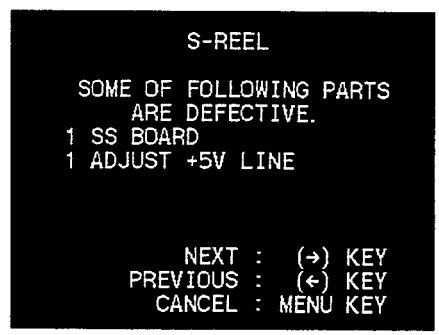




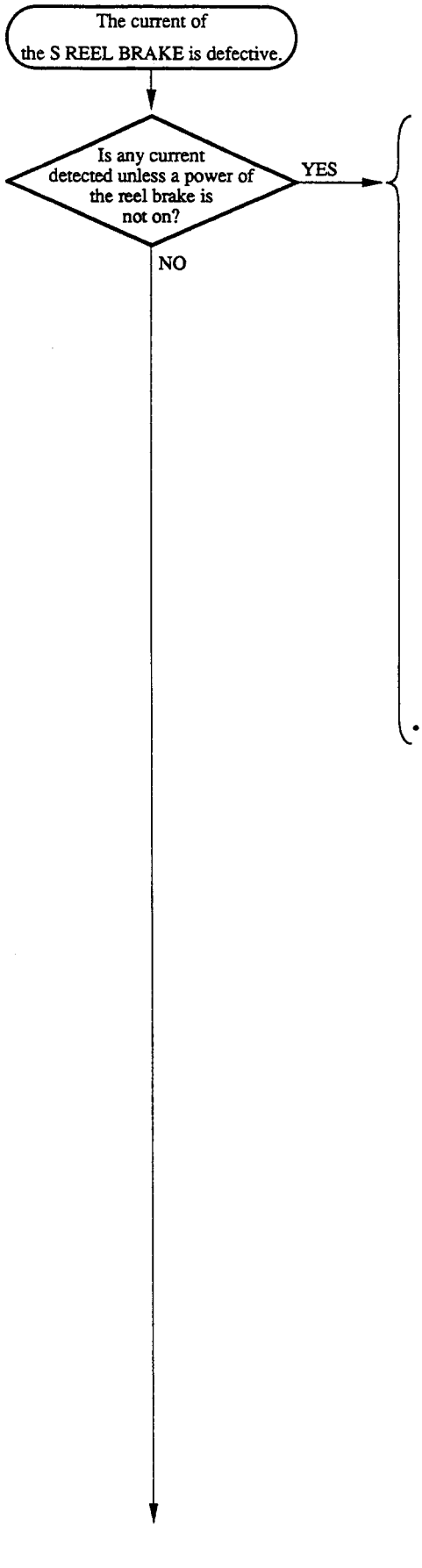
- The unit checks automatically and searches a defective device.







- The probable cause is that an error occurs around an A/D converter for detecting the S reel current.

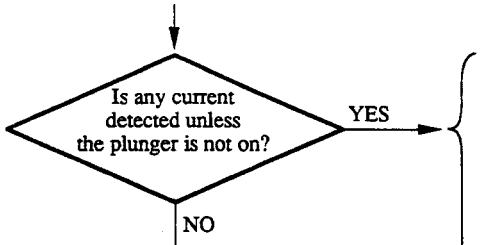



```
          S-REEL

  S REEL BRAKE CURRENT
       NO GOOD.




        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          S-REEL

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
1 DR BOARD
2 SS BOARD
3 CONNECTION(DR~SS)


        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- The probable cause is that the current detecting circuit is defective.

Continues to the next page.



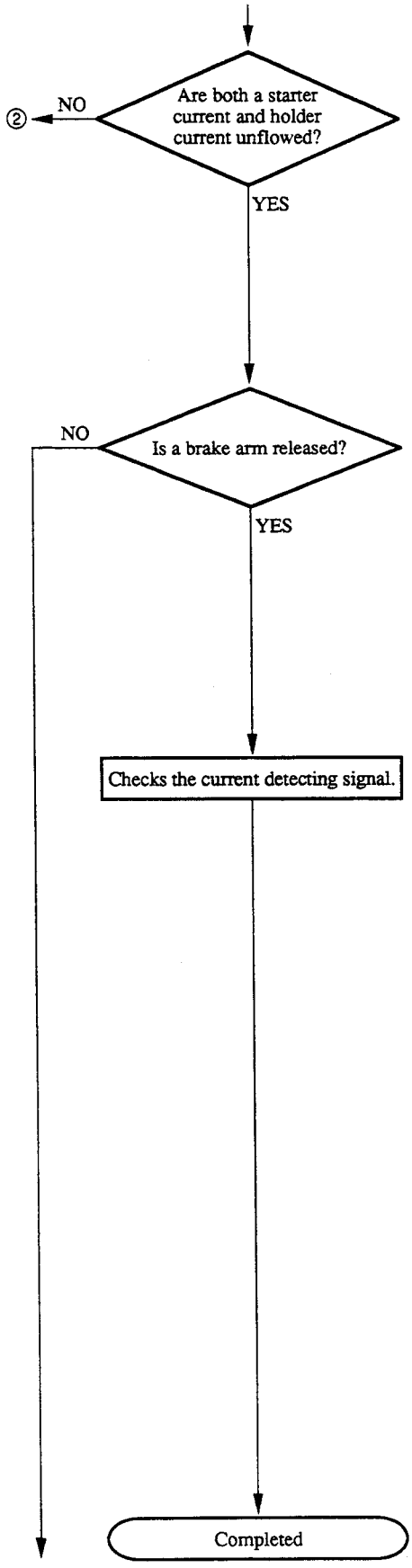

```
          S-REEL

S REEL BRAKE CURRENT
      NO GOOD.




        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          S-REEL

 SOME OF FOLLOWING PARTS
     ARE DEFECTIVE.
1 MS BOARD
2 DR BOARD
3 RM-126 BOARD
3 PD-35 BOARD
   CONTINUED···
        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          S-REEL

 SOME OF FOLLOWING PARTS
     ARE DEFECTIVE.
3 PINCH PLUNGER
3 S-REEL BRAKE PLUNGER
3 UNREG +12V LINE


        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- One probable cause is that any current is flowed by the cause such as shorting of the signal line.
  The other is that pinch plunger system is defective, because the current detecting circuit is used for both S reel brake and pinch plunger.

4-88(1800/1800P/1600/1600P)
4-86(1400/1400P/1200/1200P)




```
          S-REEL

  S REEL BRAKE CURRENT
       NO GOOD.



        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          S-REEL

  DOES THE REEL BRAKE
  RELEASE?



          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- Check that the reel brake is released or not.

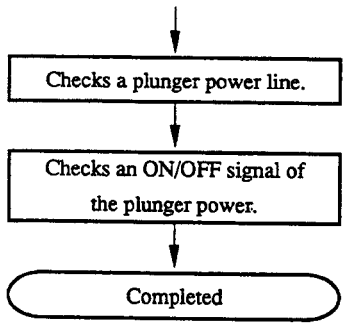
```
          S-REEL

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
  1 CONNECTION(DR~SS)
  2 SS BOARD



        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

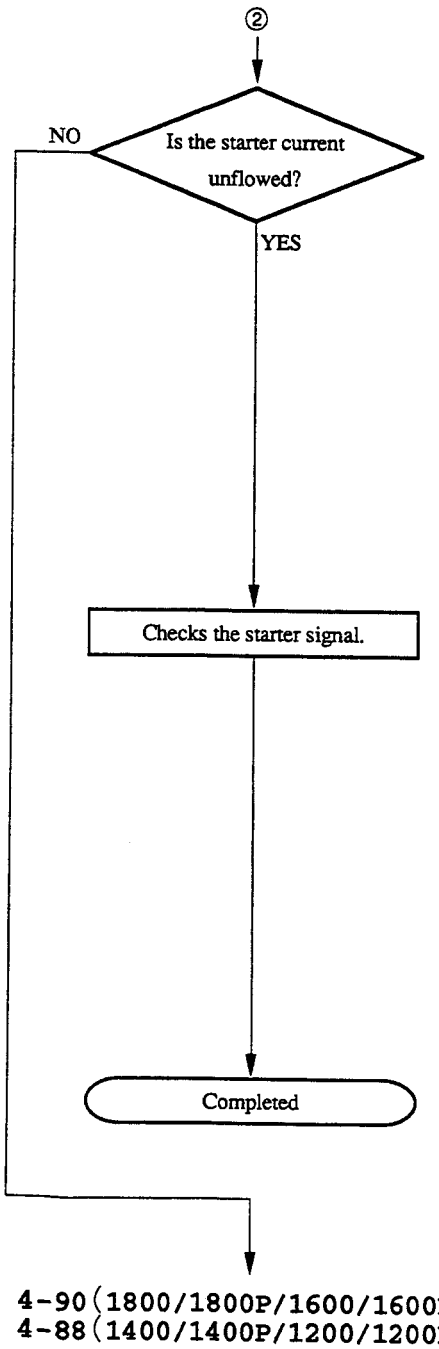
- The probable cause is the faulty connections of connectors or a break in the signal line on the SS board.

```
          S-REEL

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
  1 DR BOARD
  2 SS BOARD
  3 MB BOARD



        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

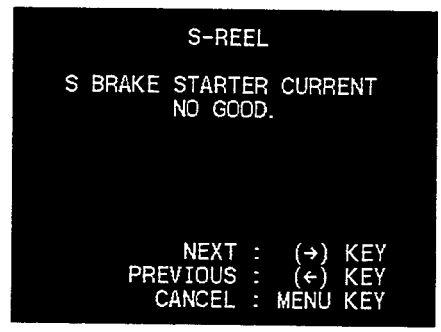
- The probable cause is that the current detecting circuit on the DR board is defective or a SOL. CURRENT signal is shorted on the SS, MB or DR board.

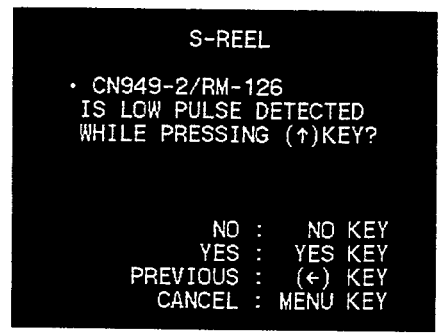
Continues to the next page.



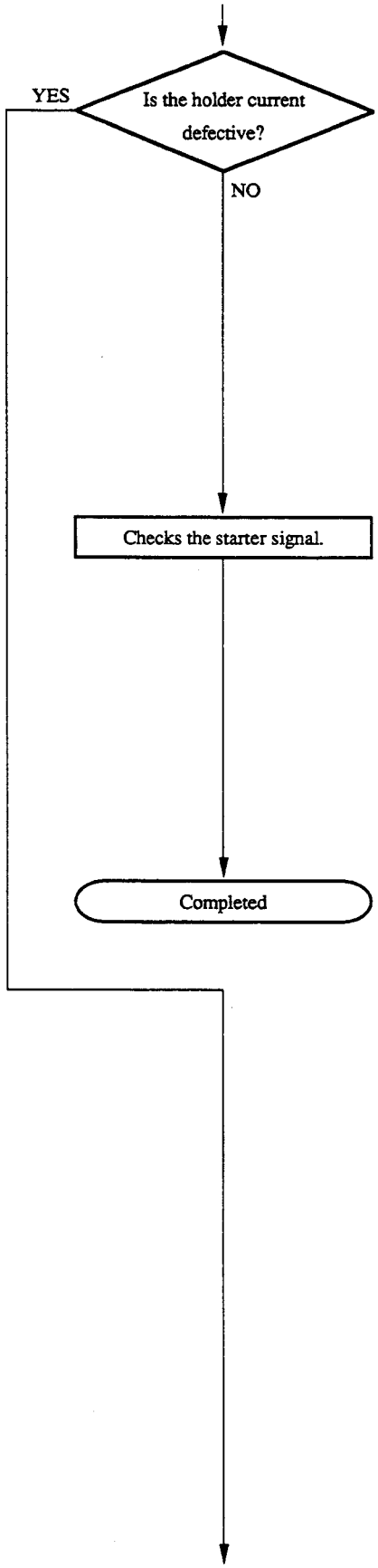


4-90(1800/1800P/1600/1600P)
4-88(1400/1400P/1200/1200P)





- Check that about 300 msec pulse is occurred every a second, while pressing the (↑) key.
- Check that the voltage is more than 10 V, while not pressing the (↑) key.

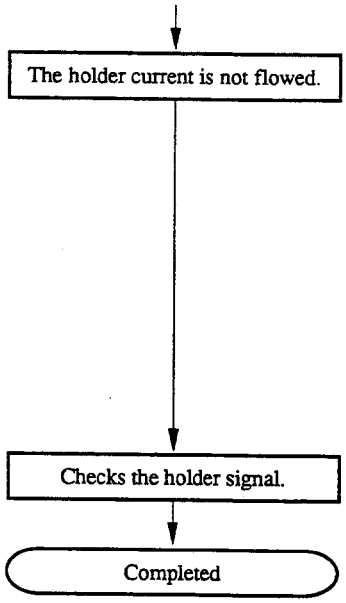


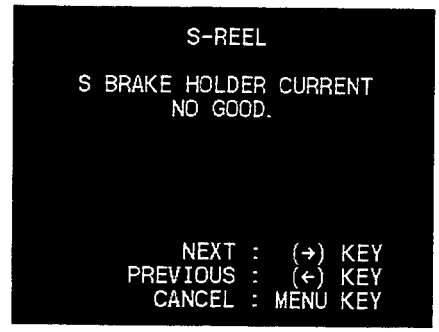

```
          S-REEL

  S BRAKE HOLDER CURRENT
        NO GOOD.




        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

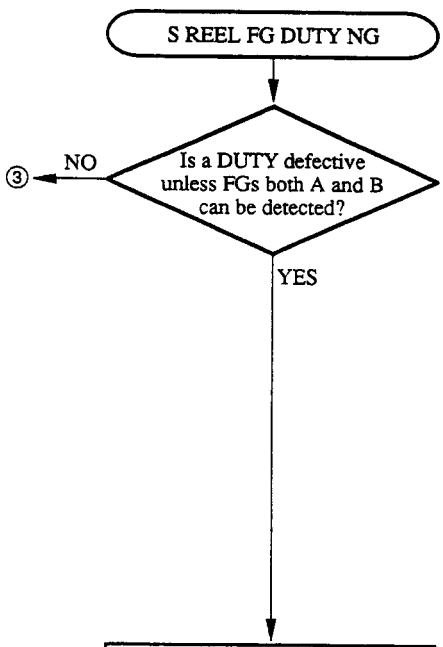
```
          S-REEL

   SOME OF FOLLOWING PARTS
       ARE DEFECTIVE.
 1 MS BOARD
 2 RM-126 BOARD
 3 S-REEL BRAKE PLUNGER


        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- The starter continues operating.

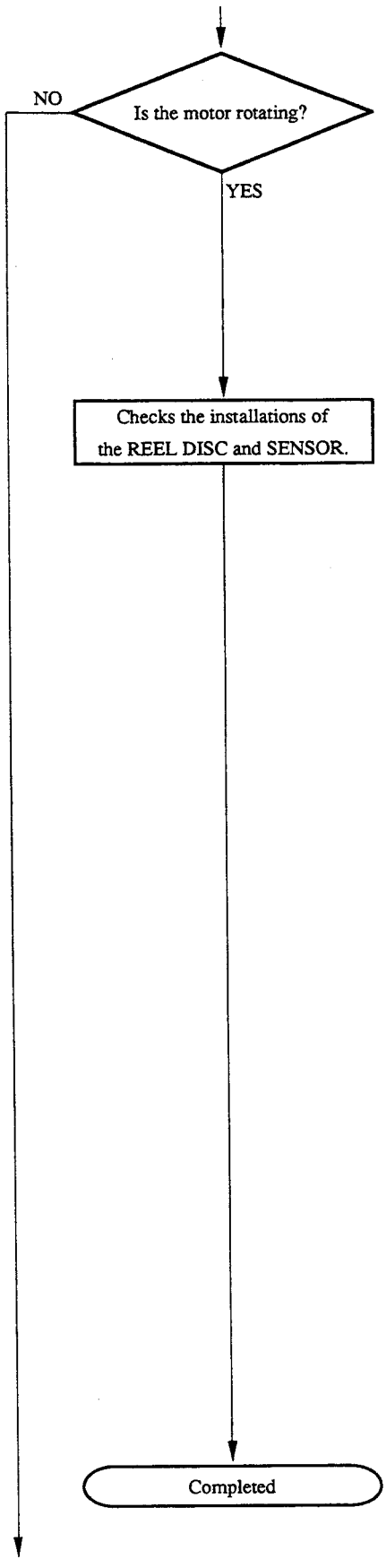
Continues to the next page.







4-92(1800/1800P/1600/1600P)
4-90(1400/1400P/1200/1200P)




```
S-REEL

S-REEL
IS THE MOTOR ROTATING?

NO :   NO KEY
YES :  YES KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

```
S-REEL

REEL DISC & SENSOR

CHECK INSTLLATION.

NG :   NO KEY
OK :  YES KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

- Refer to section 6-7 in Service Manual Vol. 1.

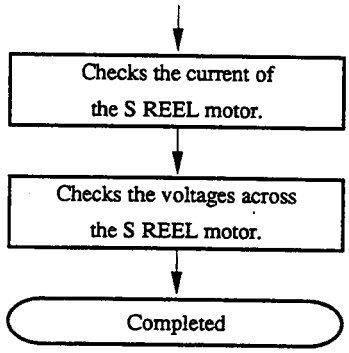
```
S-REEL

REEL DISC & SENSOR
READJUST OR CHANGE IT.

NEXT :  (→) KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

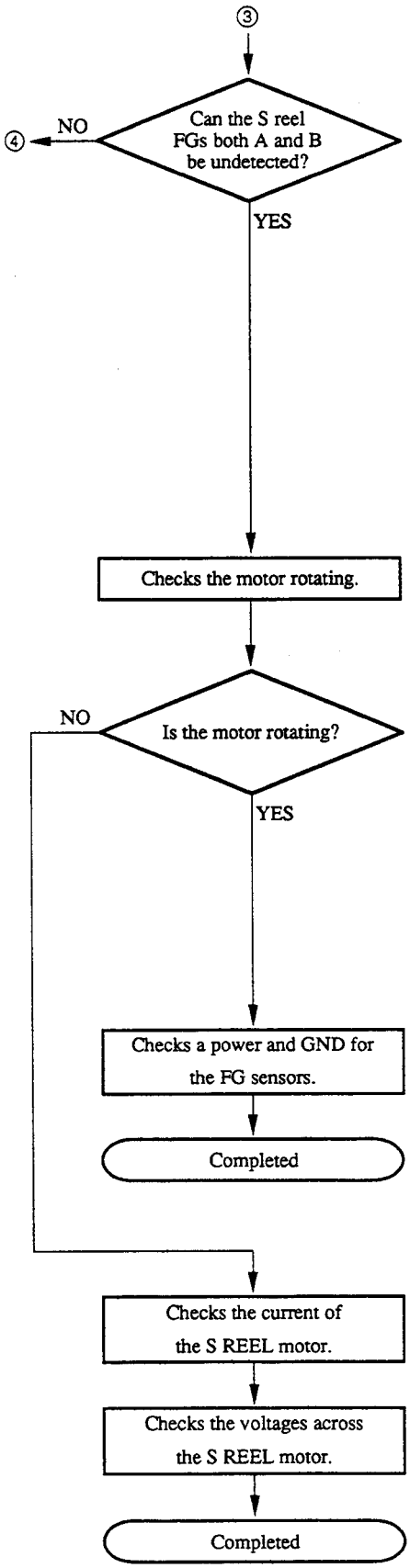
- Refer to section 6-7 in Service Manual Vol. 1.

```
S-REEL

FOLLOWING PART IS
DEFECTIVE.

· S REEL FG SENSOR

NEXT :  (→) KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

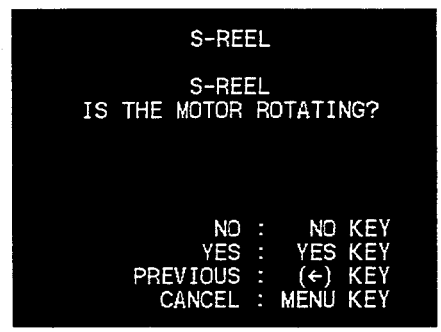
- The probable cause is that the FG sensors A and B are shorted.

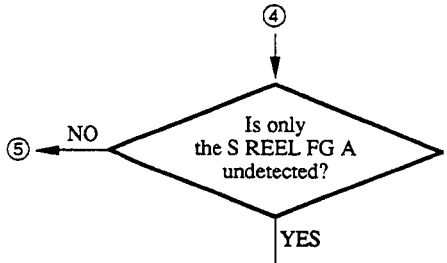
Continues to the next page.


Checks the current of
the S REEL motor.
Checks the voltages across
the S REEL motor.
Completed

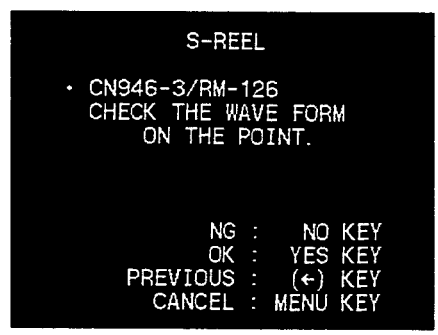

③
Can the S reel FGs both A and B be undetected?
NO
④
YES
Checks the motor rotating.
Is the motor rotating?
NO
YES
Checks a power and GND for the FG sensors.
Completed
Checks the current of the S REEL motor.
Checks the voltages across the S REEL motor.
Completed

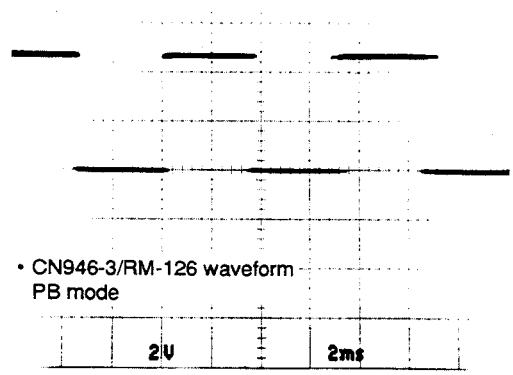
S-REEL
S REEL FG DUTY
NO GOOD.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


S-REEL
S-REEL
IS THE MOTOR ROTATING?
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



Checks the waveform of
the S REEL FG A.



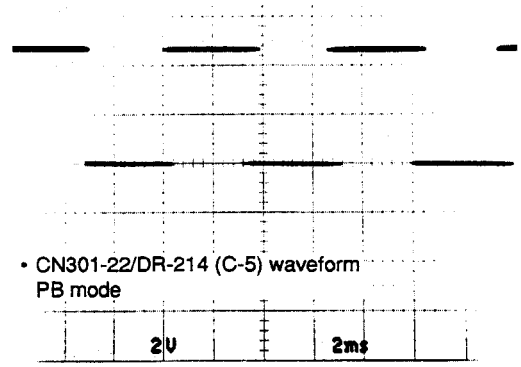


4-96 (1800/1800P/1600/1600P)
4-94 (1400/1400P/1200/1200P)

S-REEL

• CN301-22/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

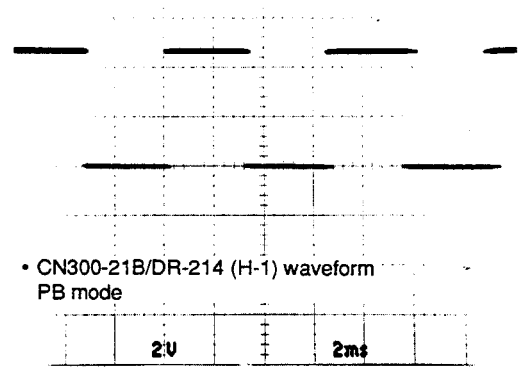


• CN301-22/DR-214 (C-5) waveform
PB mode

S-REEL

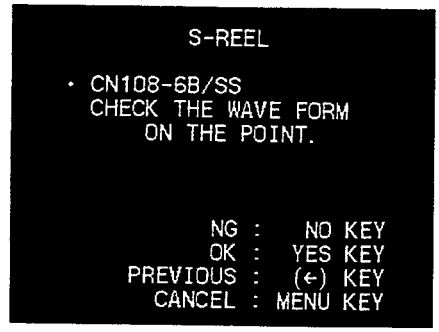
• CN300-21B/DR
CHECK THE WAVE FORM
ON THE POINT.

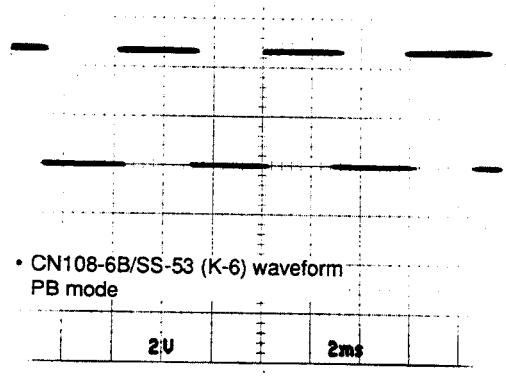
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

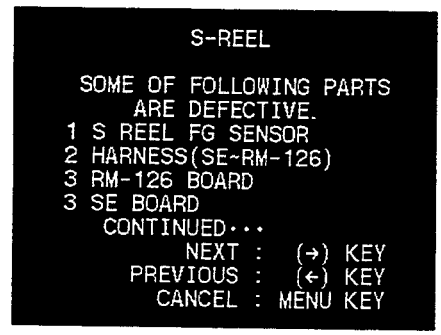


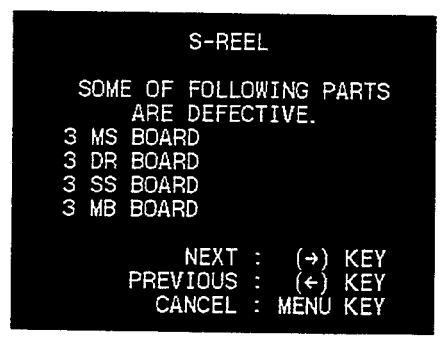
• CN300-21B/DR-214 (H-1) waveform
PB mode

Continues to the next page.









- The probable cause is that any signal is not supplied from the FG sensor or the signal line is shorted to other signal.

Completed

⑤

Checks the waveform of the S REEL FG B.

S-REEL

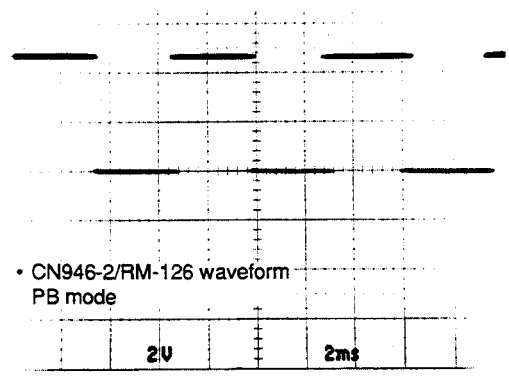
S REEL FG B
COULD NOT BE FOUND.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

S-REEL

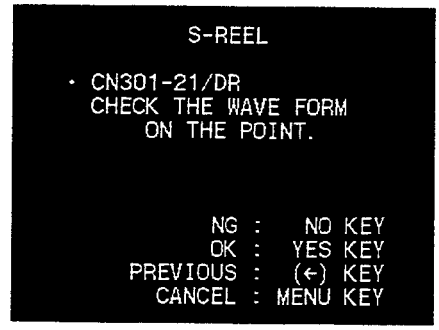
• CN946-2/RM-126
CHECK THE WAVE FORM
ON THE POINT.

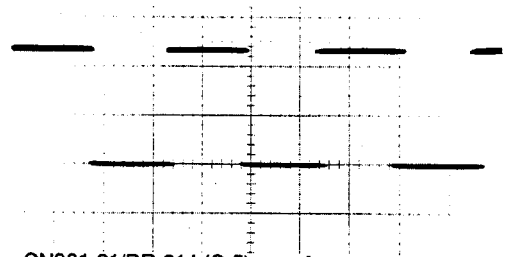
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



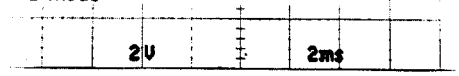
• CN946-2/RM-126 waveform
PB mode

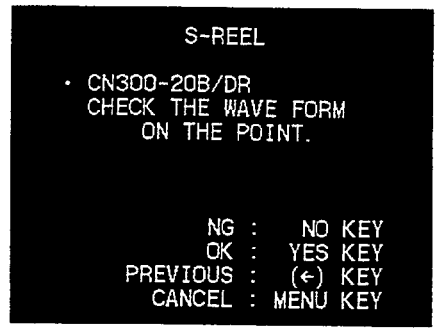
Continues to the next page.

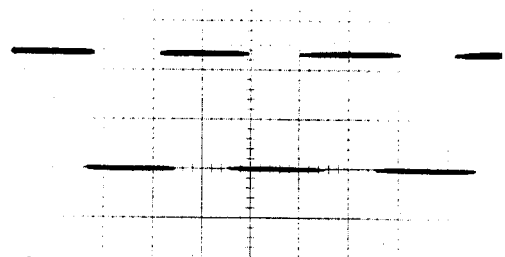




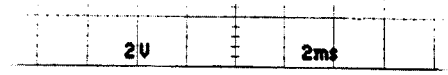
• CN301-21/DR-214 (C-5) waveform
PB mode



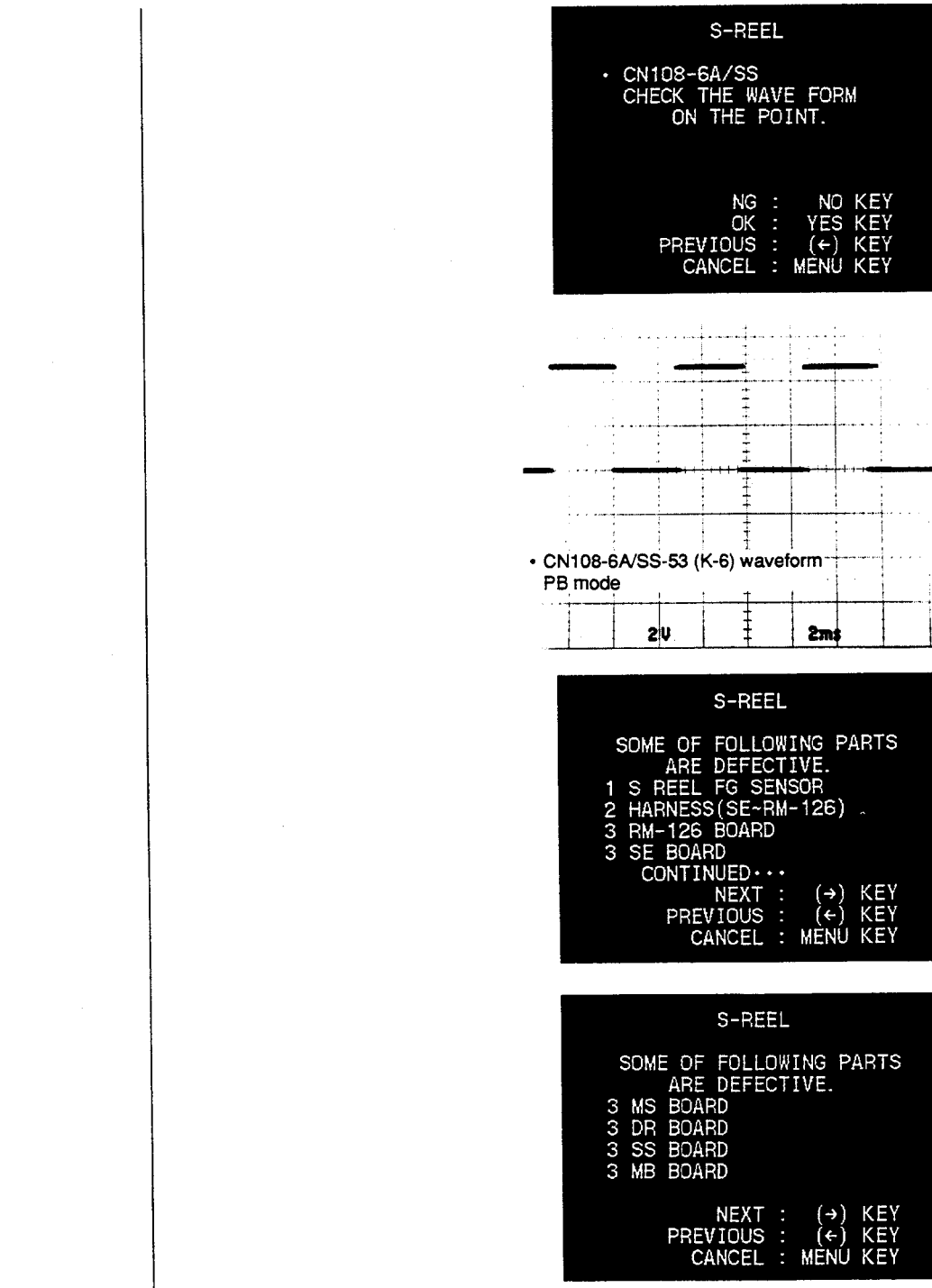




• CN300-20B/DR-214 (H-1) waveform
PB mode

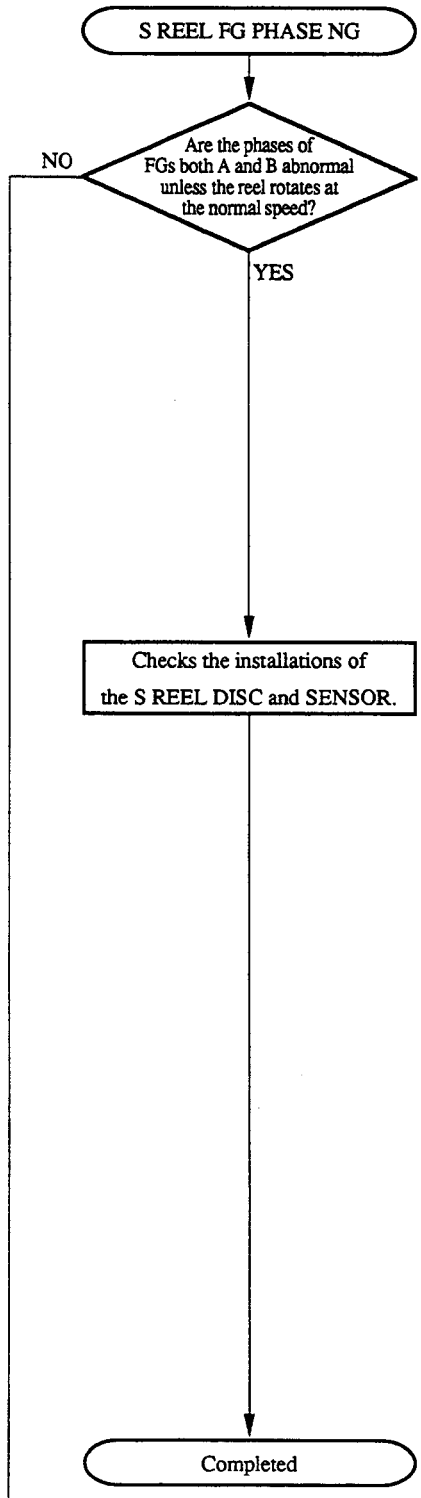


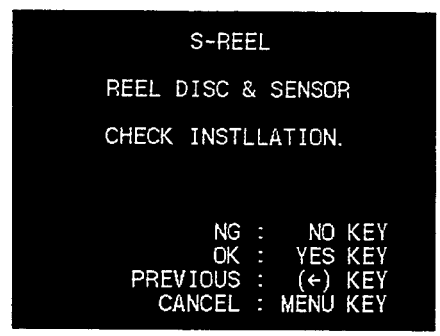
4-100(1800/1800P/1600/1600P)
4-98(1400/1400P/1200/1200P)



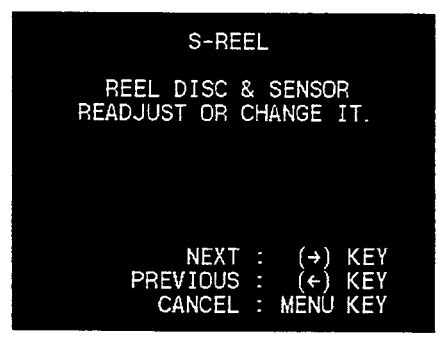
- The probable cause is that any signal is not supplied from the FG sensor or the signal line is shorted to other signal.

Completed


S REEL FG PHASE NG
Are the phases of FGs both A and B abnormal unless the reel rotates at the normal speed?
NO
YES
Checks the installations of the S REEL DISC and SENSOR.
Completed

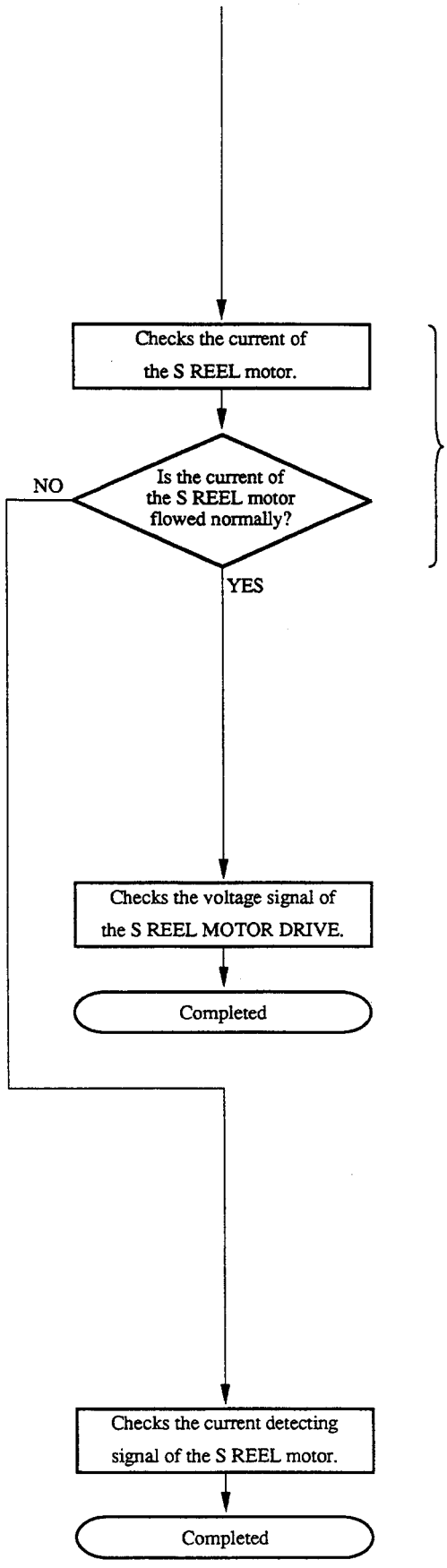


- Refer to section 6-7 in Service Manual Vol. 1.

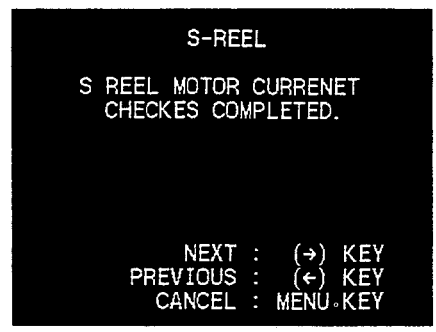


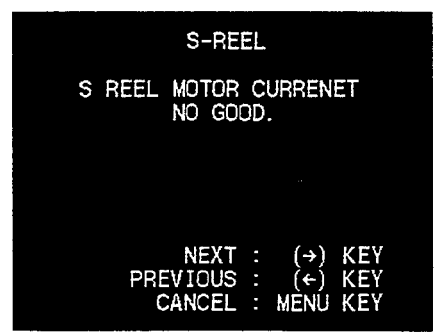
- Refer to section 6-7 in Service Manual Vol. 1.

4-102(1800/1800P/1600/1600P)
4-100(1400/1400P/1200/1200P)

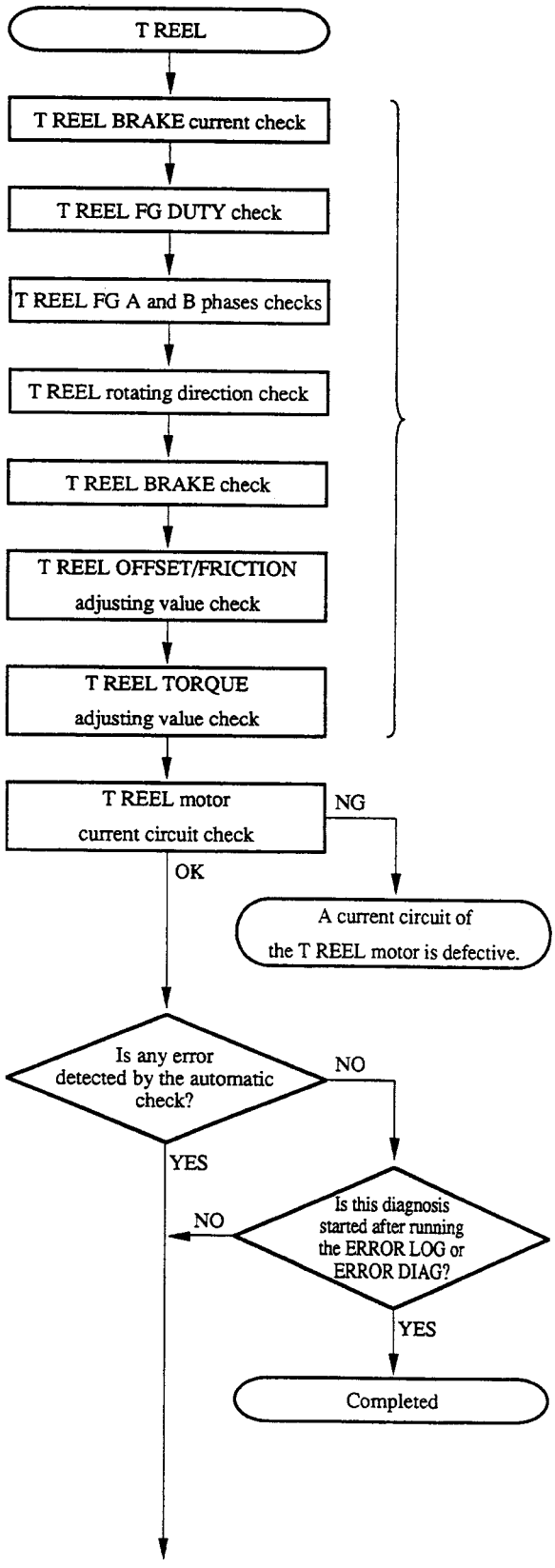

Checks the current of the S REEL motor.
Is the current of the S REEL motor flowed normally?
NO
YES
Checks the voltage signal of the S REEL MOTOR DRIVE.
Completed
Checks the current detecting signal of the S REEL motor.
Completed

- The unit checks automatically.





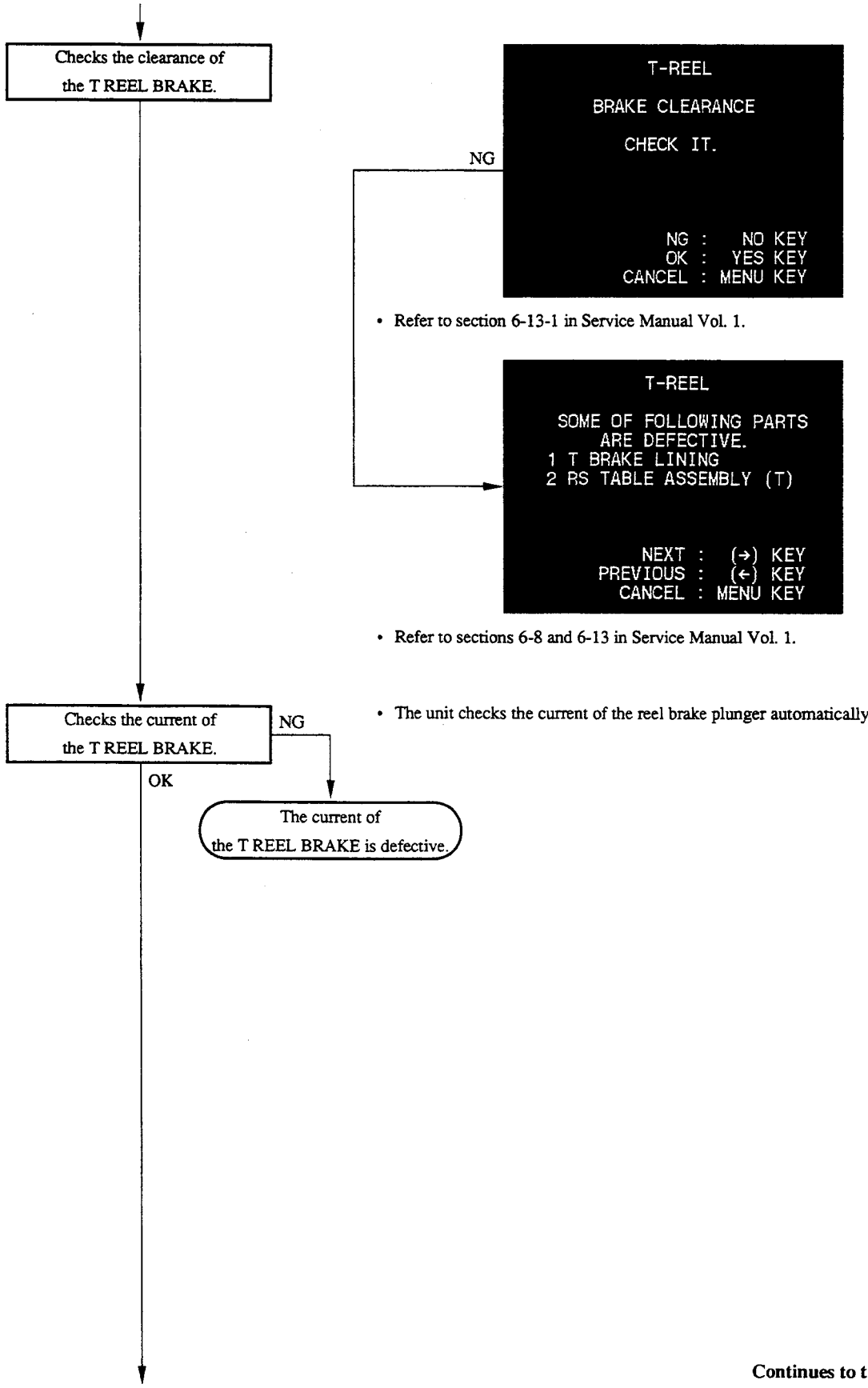
(8) T REEL Diagnosis


T REEL
T REEL BRAKE current check
T REEL FG DUTY check
T REEL FG A and B phases checks
T REEL rotating direction check
T REEL BRAKE check
T REEL OFFSET/FRICTION adjusting value check
T REEL TORQUE adjusting value check
T REEL motor current circuit check
NG
OK
A current circuit of the T REEL motor is defective.
Is any error detected by the automatic check?
NO
YES
Is this diagnosis started after running the ERROR LOG or ERROR DIAG?
NO
YES
Completed

- The unit checks automatically.

- If the automatic check is completed at this step, after running the ERROR LOG or ERROR DIAG, the check is completed. Then, the diagnosis is proceeded to the next step.

4-104 (1800/1800P/1600/1600P)
4-102 (1400/1400P/1200/1200P)

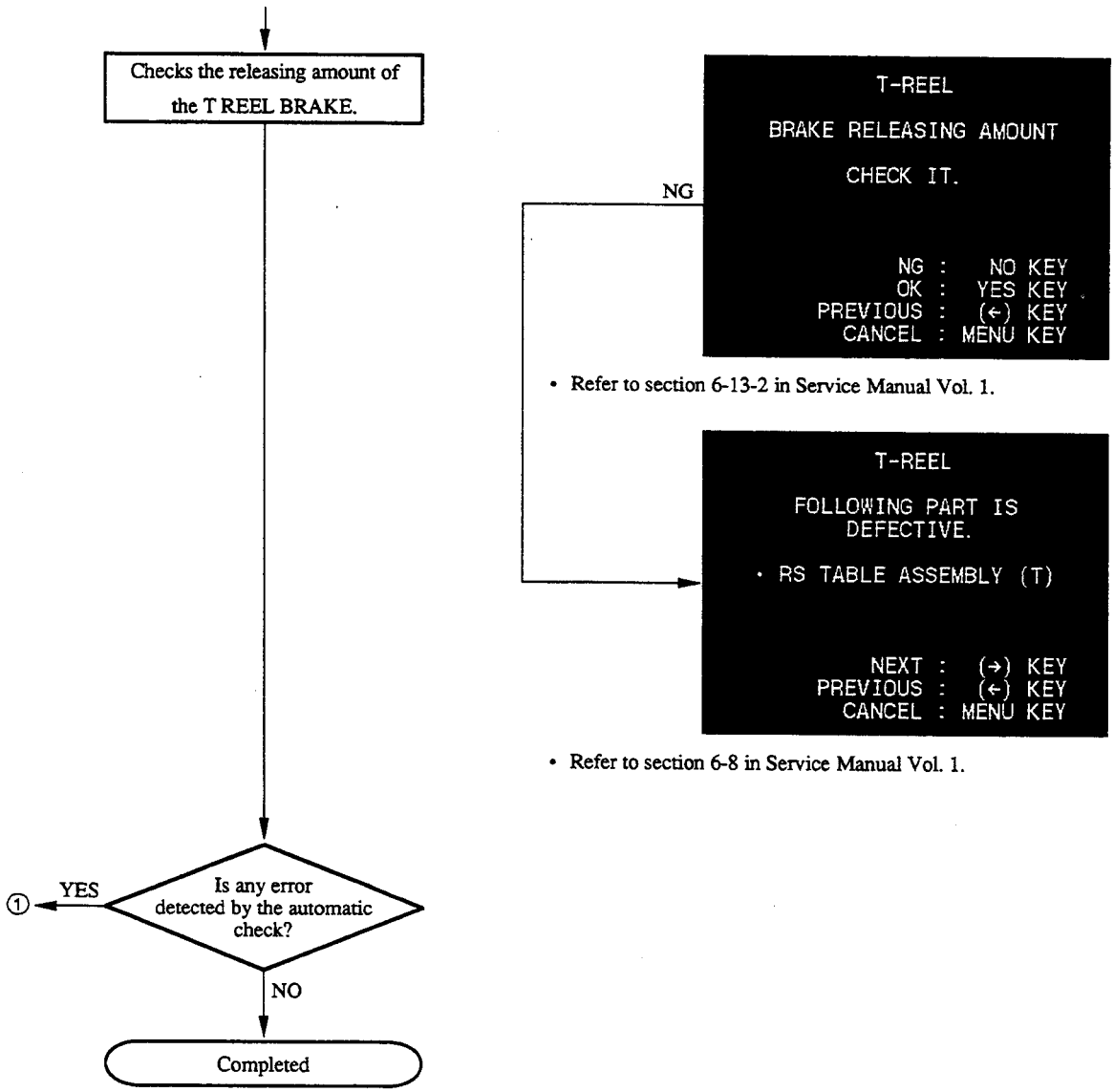


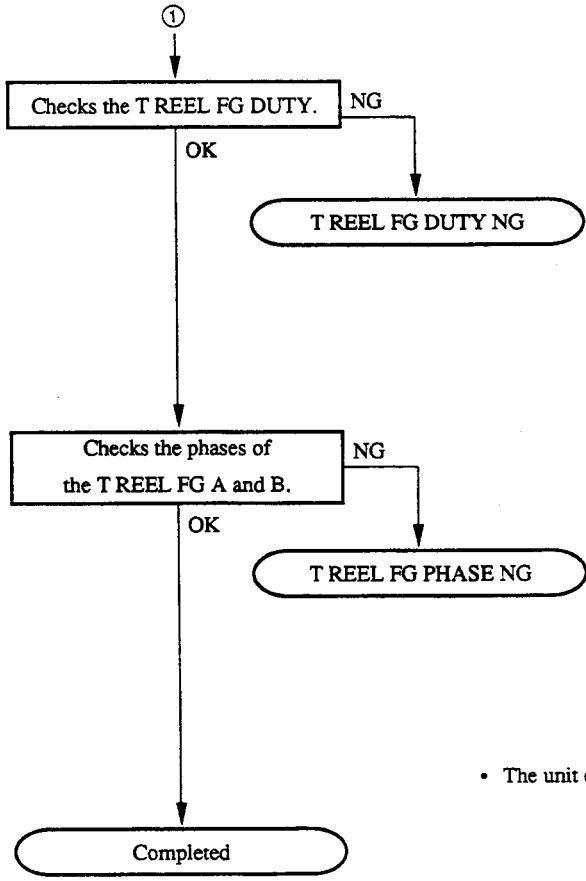
- Refer to section 6-13-1 in Service Manual Vol. 1.

- Refer to sections 6-8 and 6-13 in Service Manual Vol. 1.

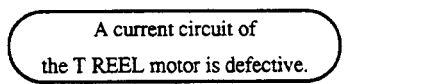
- The unit checks the current of the reel brake plunger automatically.

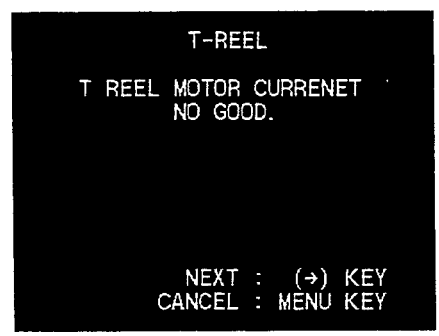
Continues to the next page.

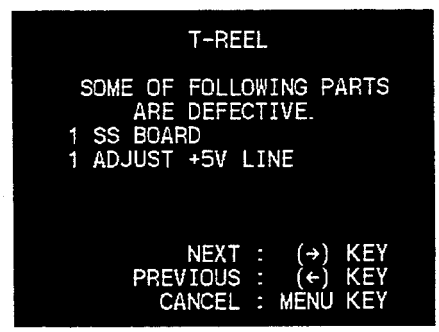

Checks the releasing amount of the T REEL BRAKE.
NG
T-REEL
BRAKE RELEASING AMOUNT
CHECK IT.
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
• Refer to section 6-13-2 in Service Manual Vol. 1.
T-REEL
FOLLOWING PART IS DEFECTIVE.
• RS TABLE ASSEMBLY (T)
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
• Refer to section 6-8 in Service Manual Vol. 1.
① YES
Is any error detected by the automatic check?
NO
Completed



- The unit checks automatically and searches a defective device.

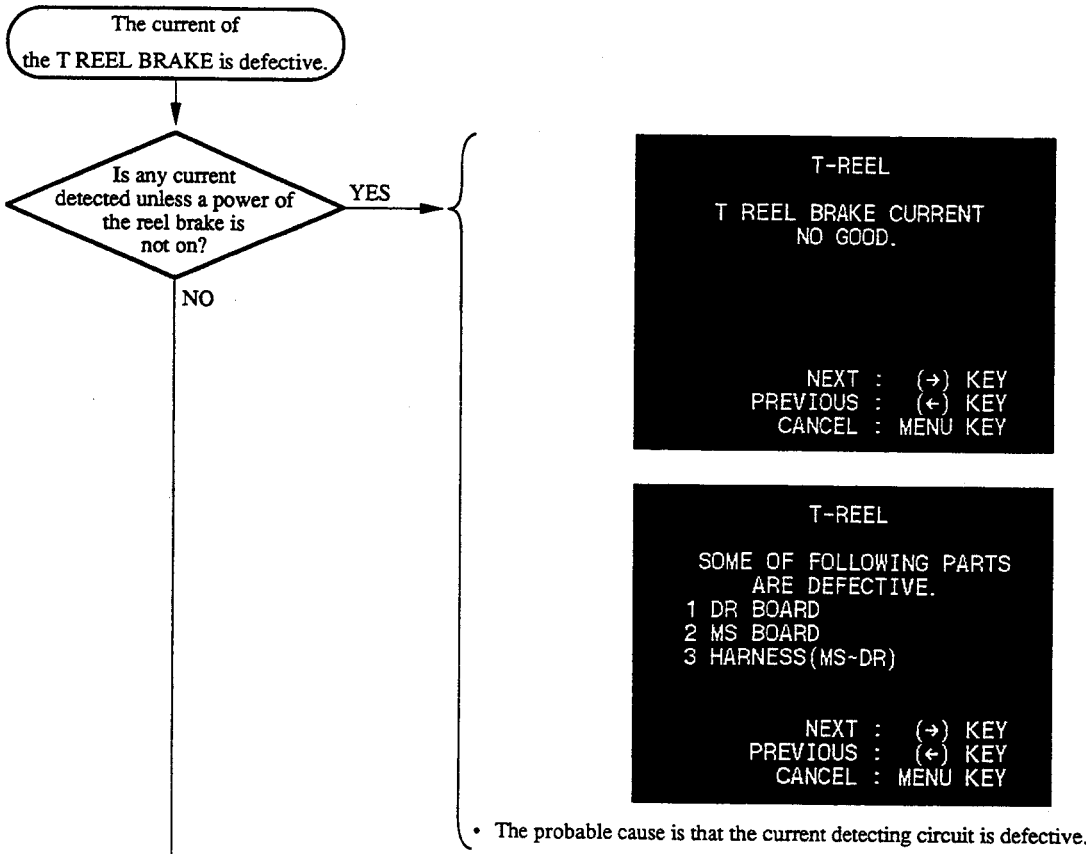






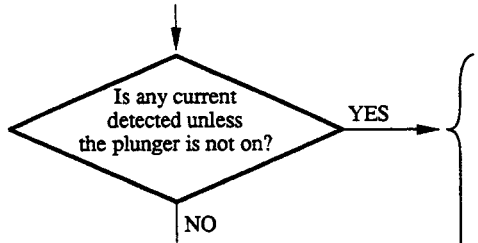
- The probable cause is that an error occurs around an A/D converter for detecting the T reel current.

4-107 (1800/1800P/1600/1600P)
4-105 (1400/1400P/1200/1200P)



- The probable cause is that the current detecting circuit is defective.

4-108(1800/1800P/1600/1600P)
4-106(1400/1400P/1200/1200P)



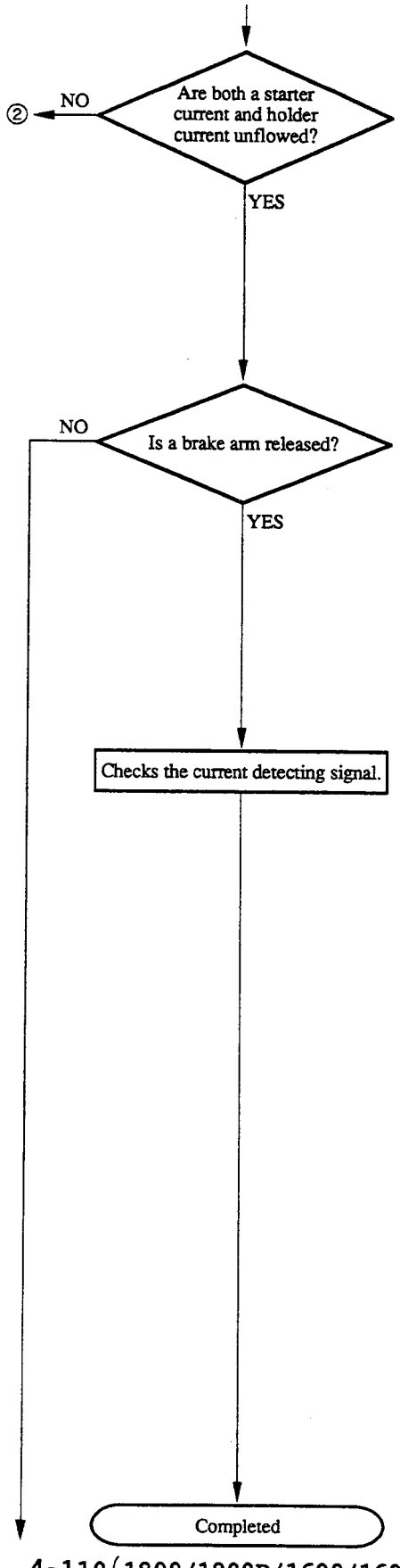

```
          T-REEL

   T REEL BRAKE CURRENT
        NO GOOD.




        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          T-REEL

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
1 MS BOARD
2 DR BOARD
3 RM-127 BOARD
3 T-REEL BRAKE PLUNGER
   CONTINUED···
        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

```
          T-REEL

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
3 UNREG +12V LINE




        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- The probable cause is that any current is flowed by the cause such as shorting of the signal line.

Continues to the next page.



4-110(1800/1800P/1600/1600P)
4-108(1400/1400P/1200/1200P)

```
T-REEL

T REEL BRAKE CURRENT
NO GOOD.


NEXT :   (→) KEY
PREVIOUS :   (←) KEY
CANCEL : MENU KEY
```

```
T-REEL

DOES THE REEL BRAKE
RELEASE?


NO :   NO KEY
YES :   YES KEY
PREVIOUS :   (←) KEY
CANCEL : MENU KEY
```

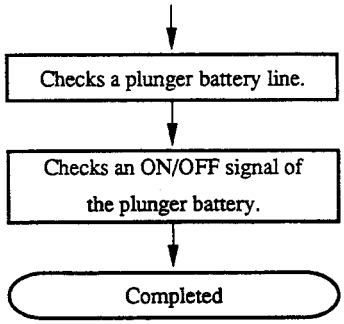
- Check that the reel brake is released or not.

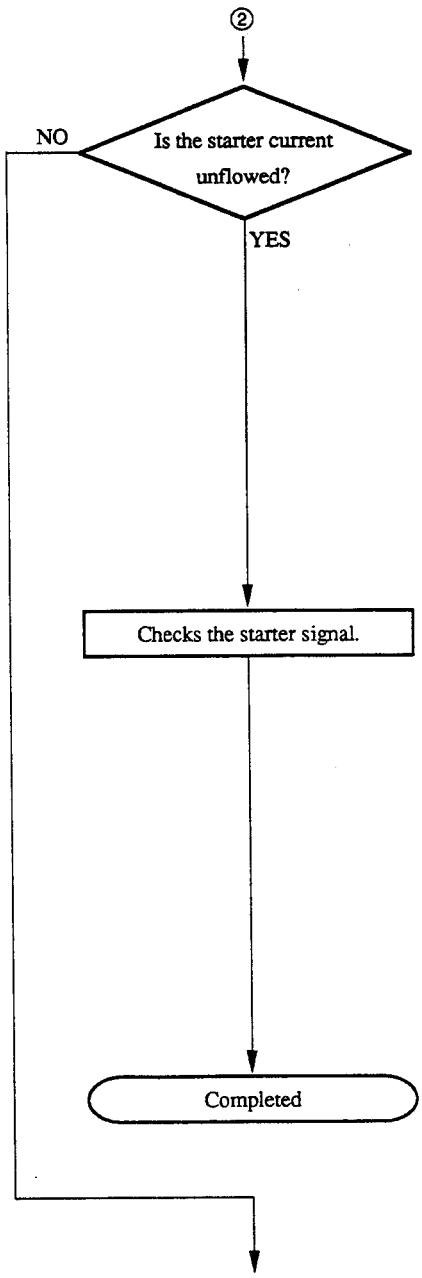
```
T-REEL

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 HARNESS(MS-DR)
2 MS BOARD


NEXT :   (→) KEY
PREVIOUS :   (←) KEY
CANCEL : MENU KEY
```

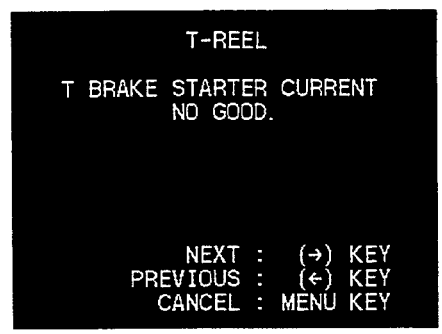
- The probable cause is the faulty connections of connectors or a break in the signal line on the SS board.

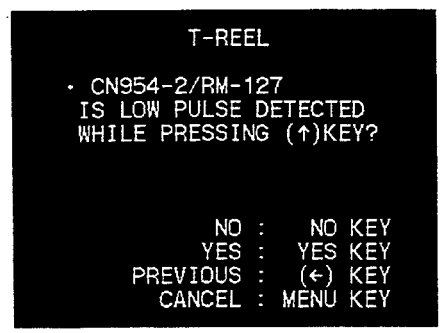
```
T-REEL

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 DR BOARD
2 MS BOARD
3 HARNESS(MS-DR)


NEXT :   (→) KEY
PREVIOUS :   (←) KEY
CANCEL : MENU KEY
```

- The probable cause is that the current detecting circuit on the DR board is defective or a SOL. CURRENT signal is shorted on the MB or DR board.



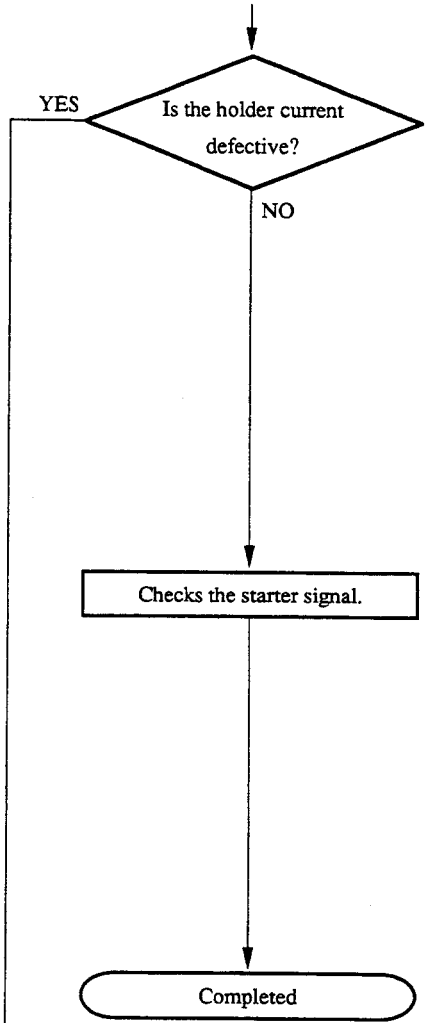






- Check that about 300 msec pulse is occurred every a second, while pressing the (↑) key.
- Check that the voltage is more than 10 V, while not pressing the (↑) key.

Continues to the next page.



T-REEL

T BRAKE HOLDER CURRENT
NO GOOD.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

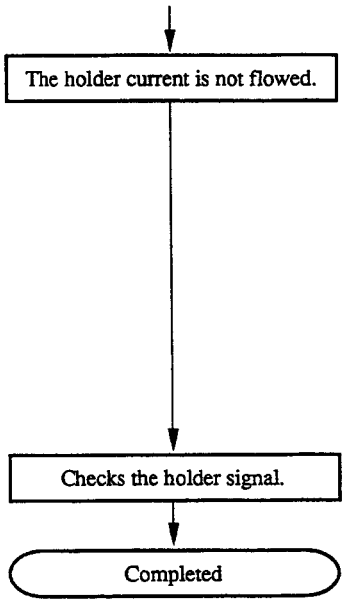
T-REEL

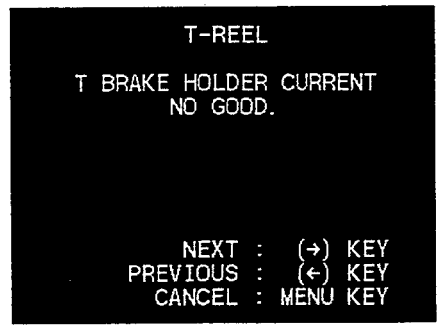
SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 MS BOARD
2 RM-127 BOARD
3 T-REEL BRAKE PLUNGER

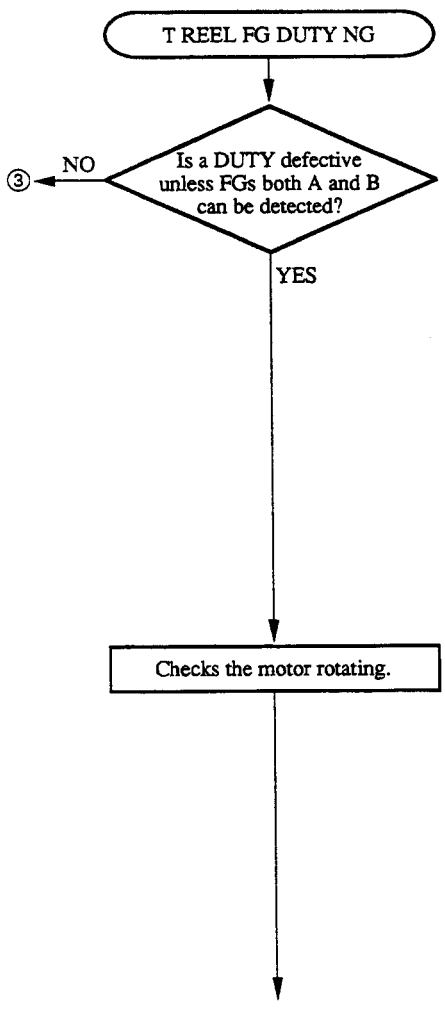
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- The starter continues operating.

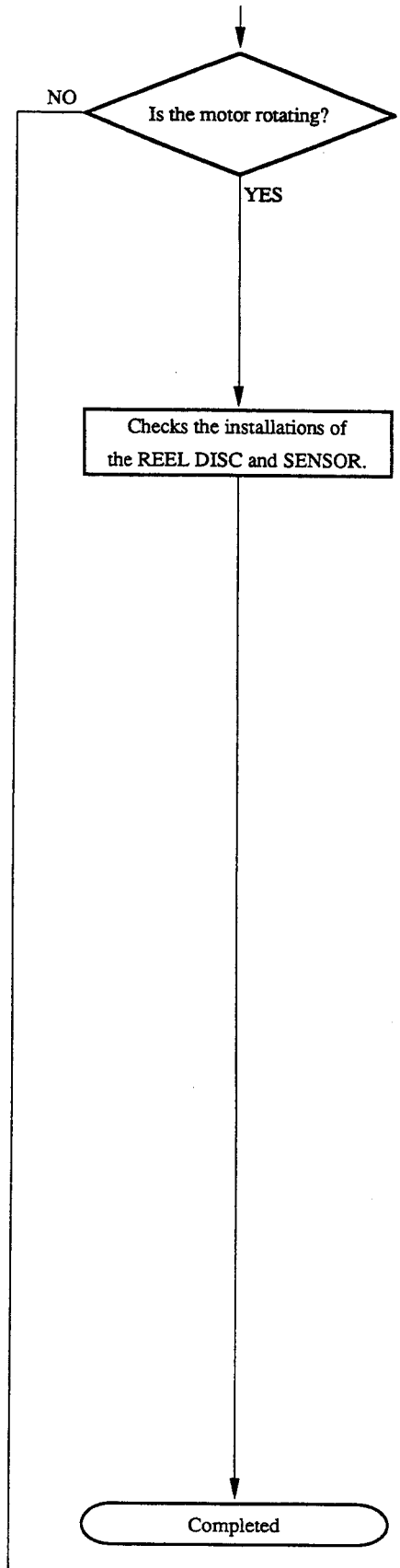
4-112 (1800/1800P/1600/1600P)
4-110 (1400/1400P/1200/1200P)







Continues to the next page.



T-REEL

T-REEL
IS THE MOTOR ROTATING?

NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

T-REEL

REEL DISC & SENSOR

CHECK INSTLLATION.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- Refer to section 6-7 in Service Manual Vol. 1.

T-REEL

REEL DISC & SENSOR
READJUST OR CHANGE IT.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- Refer to section 6-7 in Service Manual Vol. 1.

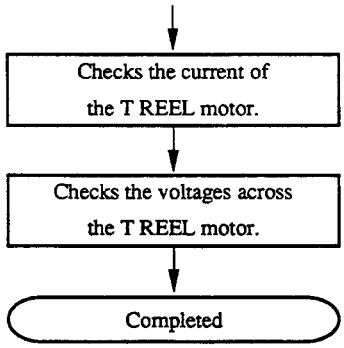
T-REEL

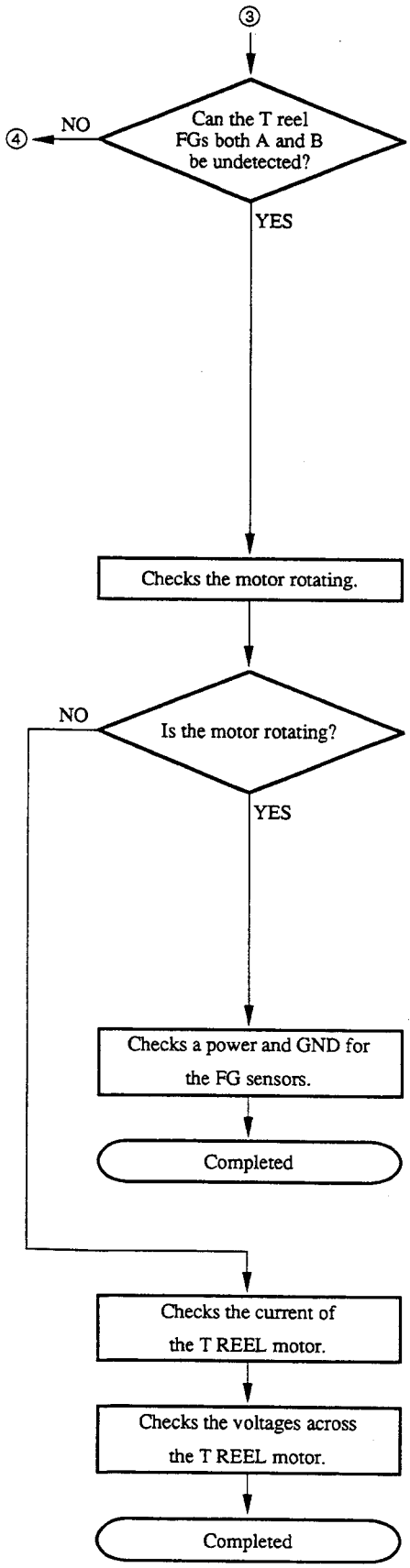
FOLLOWING PART IS
DEFECTIVE.

· T REEL FG SENSOR

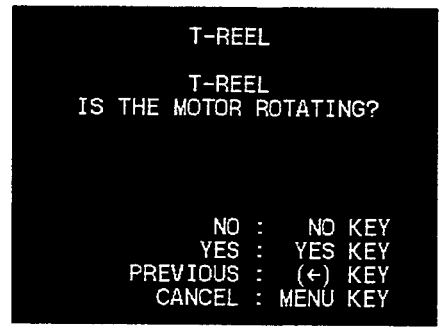
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

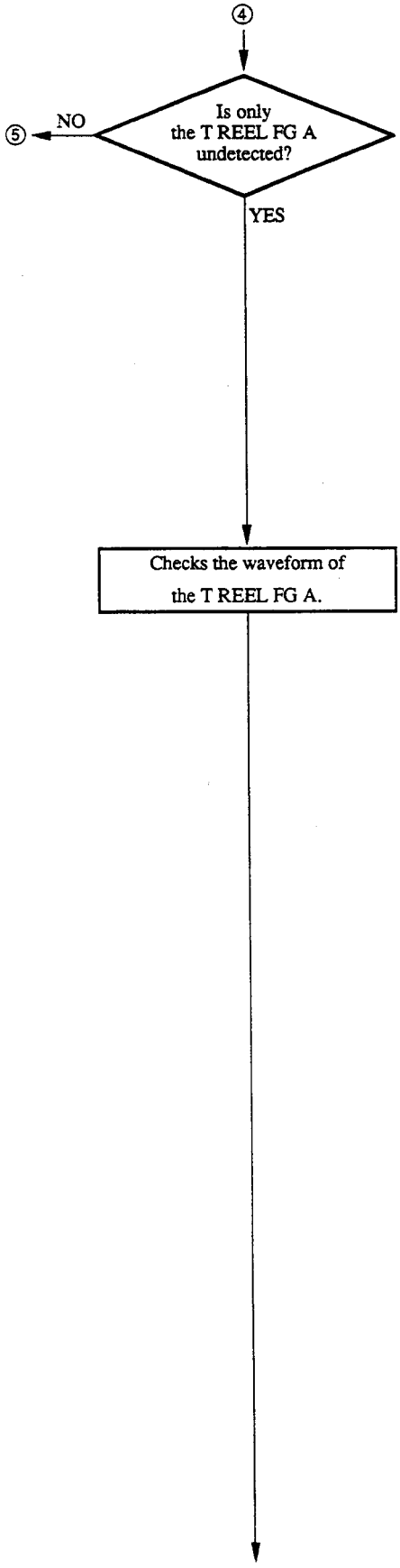
- The probable cause is that the FG sensors A and B are shorted.

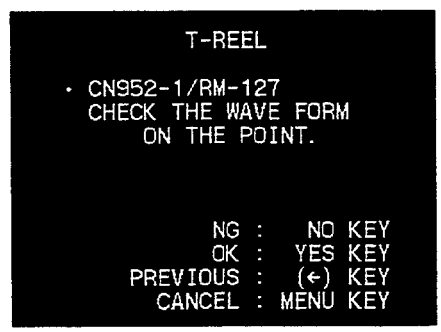

Checks the current of
the T REEL motor.
Checks the voltages across
the T REEL motor.
Completed

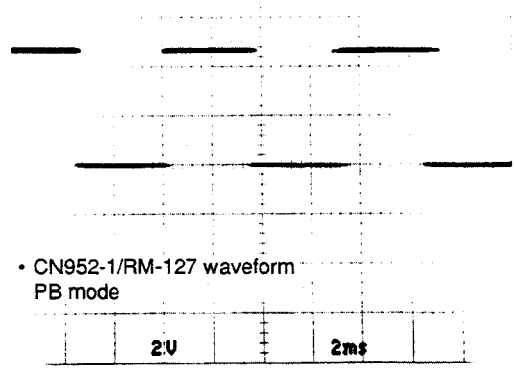

③
Can the T reel FGs both A and B be undetected?
NO
④
YES
Checks the motor rotating.
Is the motor rotating?
NO
YES
Checks a power and GND for the FG sensors.
Completed
Checks the current of the T REEL motor.
Checks the voltages across the T REEL motor.
Completed

T-REEL
T REEL FG
COULD NOT BE FOUND.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


T-REEL
T-REEL
IS THE MOTOR ROTATING?
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY





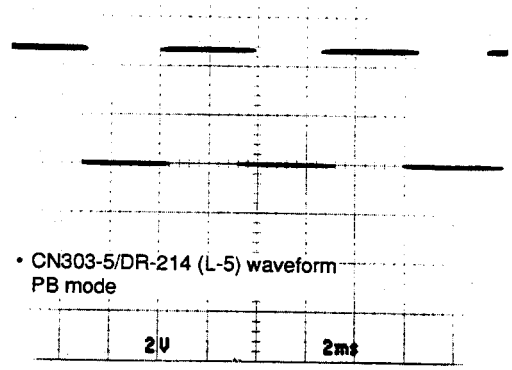


Continues to the next page.

T-REEL

• CN303-5/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

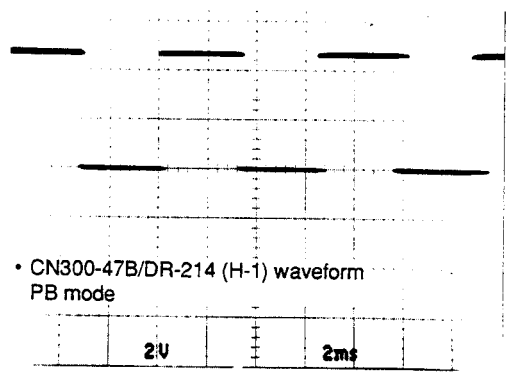


• CN303-5/DR-214 (L-5) waveform
PB mode

T-REEL

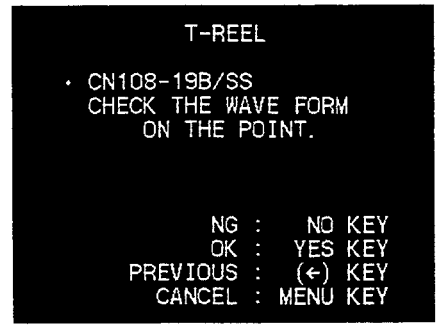
• CN300-47B/DR
CHECK THE WAVE FORM
ON THE POINT.

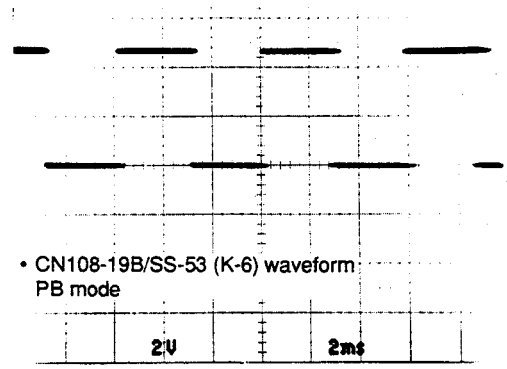
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

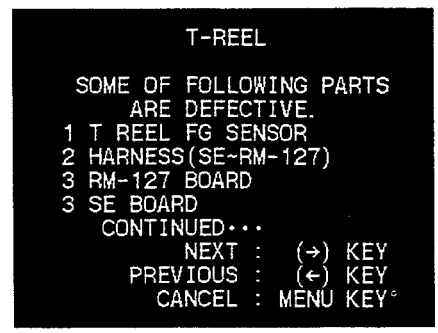


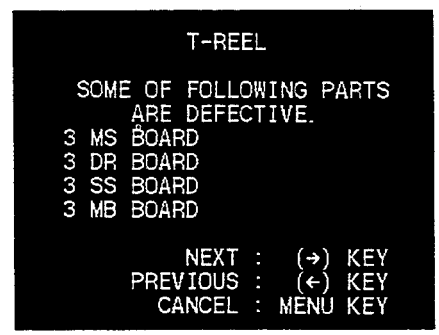
• CN300-47B/DR-214 (H-1) waveform
PB mode

4-118 (1800/1800P/1600/1600P)
4-116 (1400/1400P/1200/1200P)







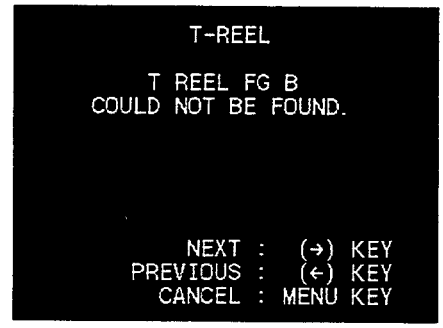


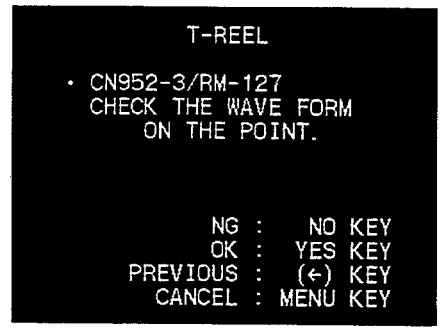
- The probable cause is that any signal is not supplied from the FG sensor or the signal line is shorted to other signal.

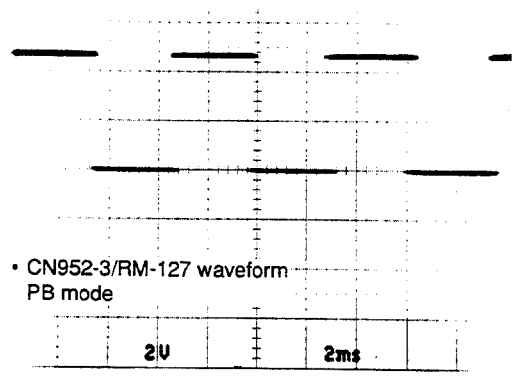
Completed

⑤

Checks the waveform of the T REEL FG B.







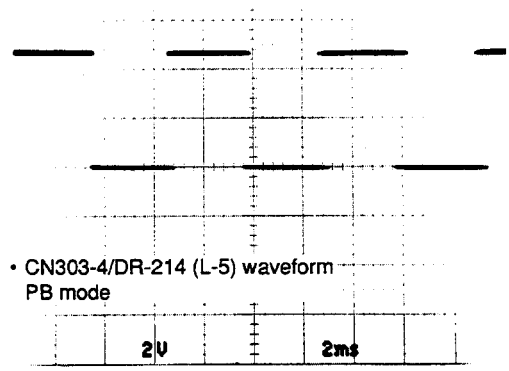
• CN952-3/RM-127 waveform
PB mode

4-120 (1800/1800P/1600/1600P)
4-118 (1400/1400P/1200/1200P)

T-REEL

• CN303-4/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

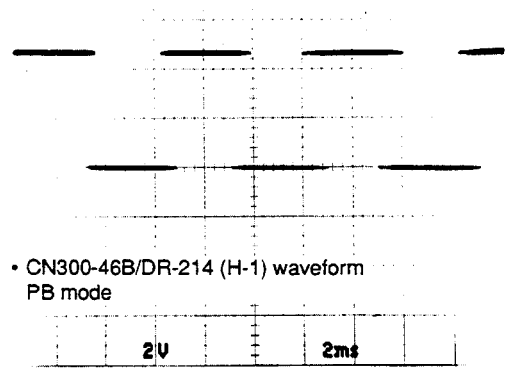


• CN303-4/DR-214 (L-5) waveform
PB mode

T-REEL

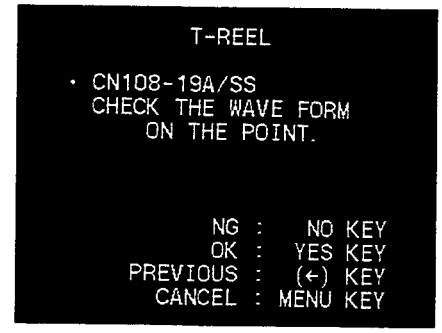
• CN300-46B/DR
CHECK THE WAVE FORM
ON THE POINT.

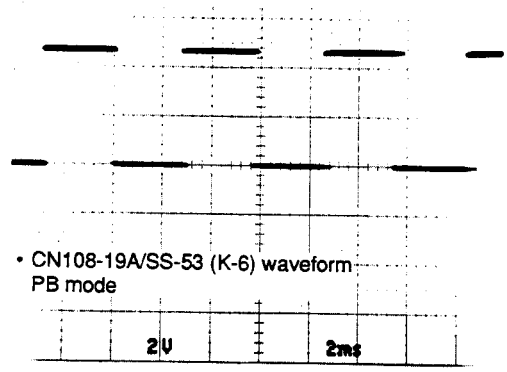
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



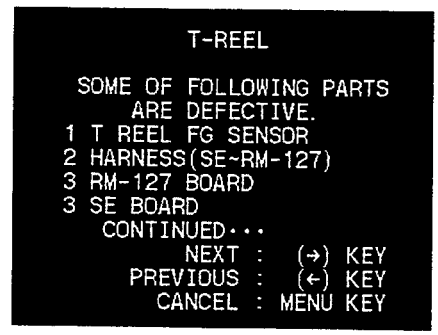
• CN300-46B/DR-214 (H-1) waveform
PB mode

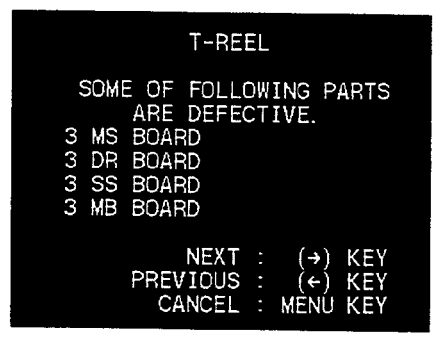
Continues to the next page.





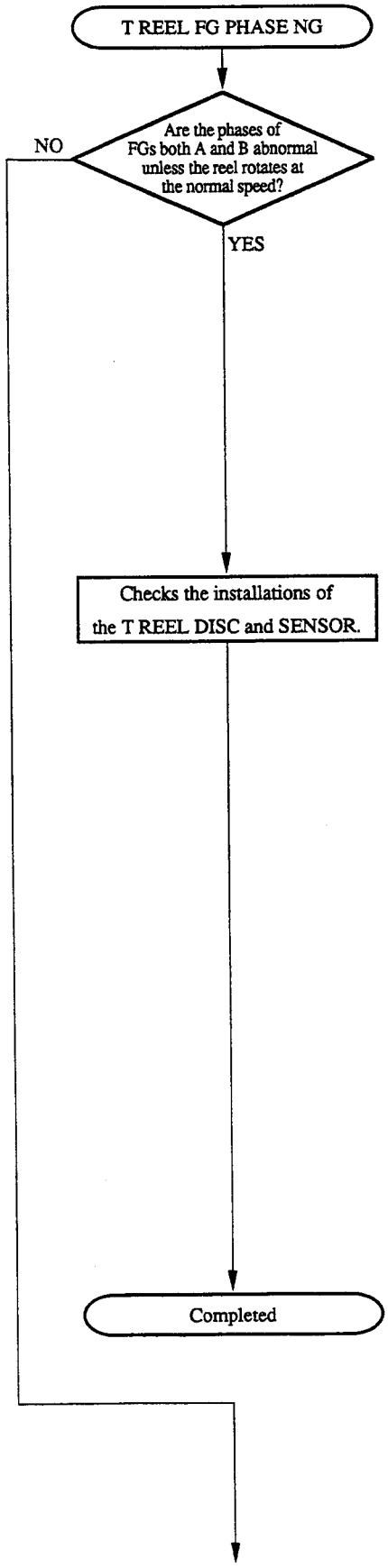
• CN108-19A/SS-53 (K-6) waveform
PB mode

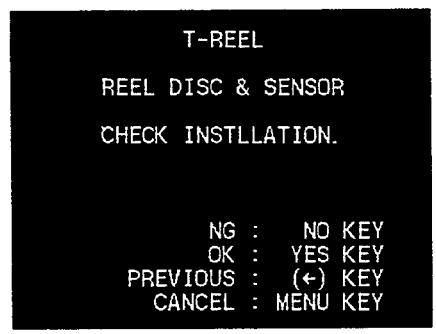




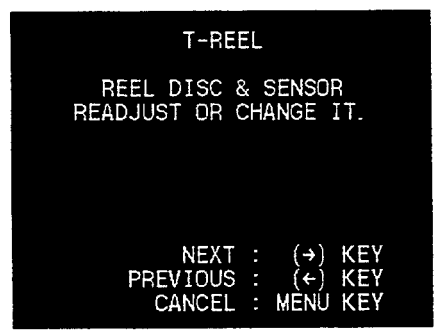
- The probable cause is that any signal is not supplied from the FG sensor or the signal line is shorted to other signal.

Completed

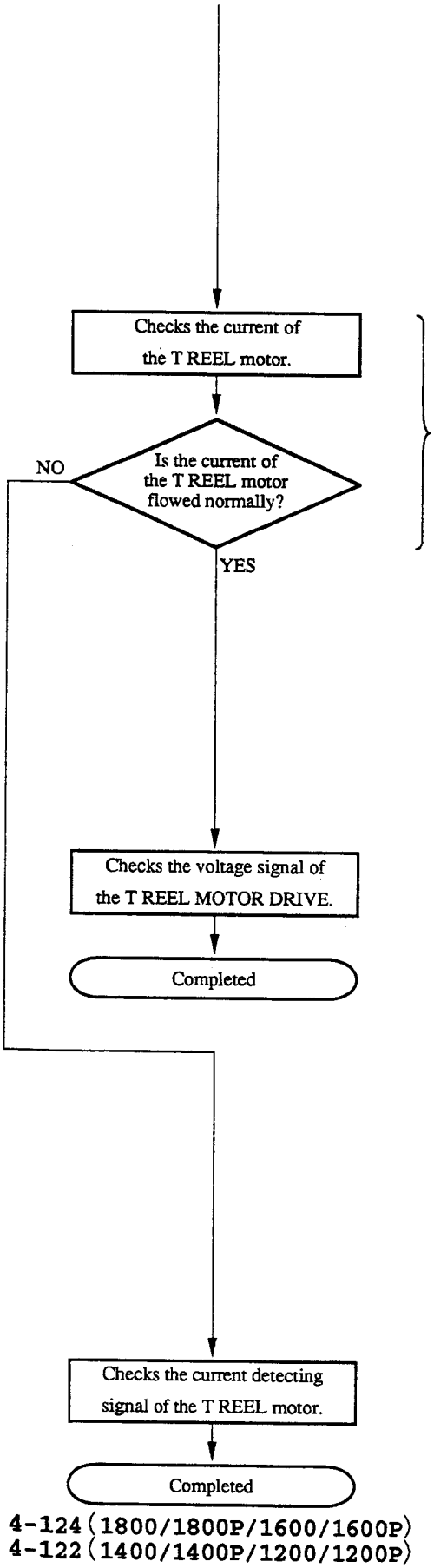

T REEL FG PHASE NG
Are the phases of FGs both A and B abnormal unless the reel rotates at the normal speed?
NO
YES
Checks the installations of the T REEL DISC and SENSOR.
Completed



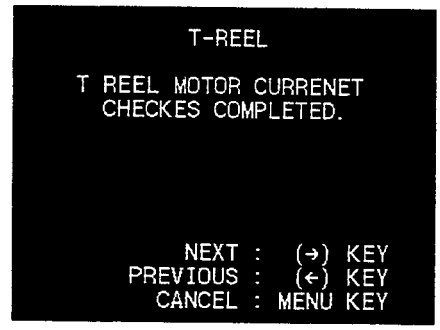
- Refer to section 6-7 in Service Manual Vol. 1.

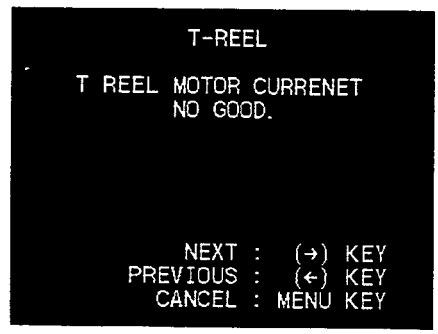


- Refer to section 6-7 in Service Manual Vol. 1.

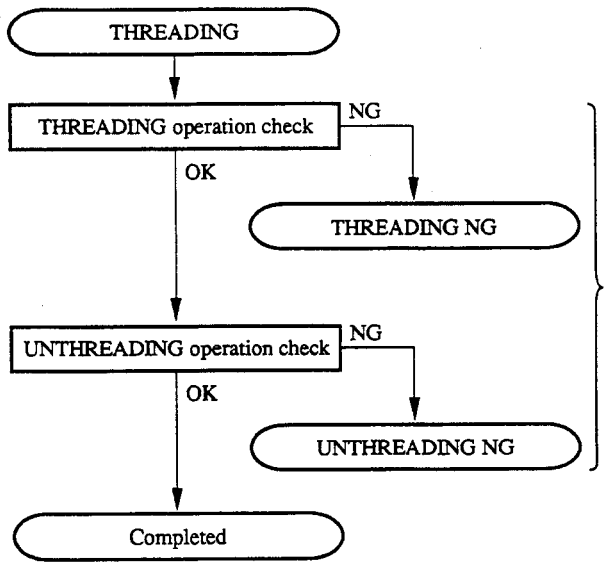

Checks the current of the T REEL motor.
Is the current of the T REEL motor flowed normally?
NO
YES
Checks the voltage signal of the T REEL MOTOR DRIVE.
Completed
Checks the current detecting signal of the T REEL motor.
Completed

- The unit checks automatically.

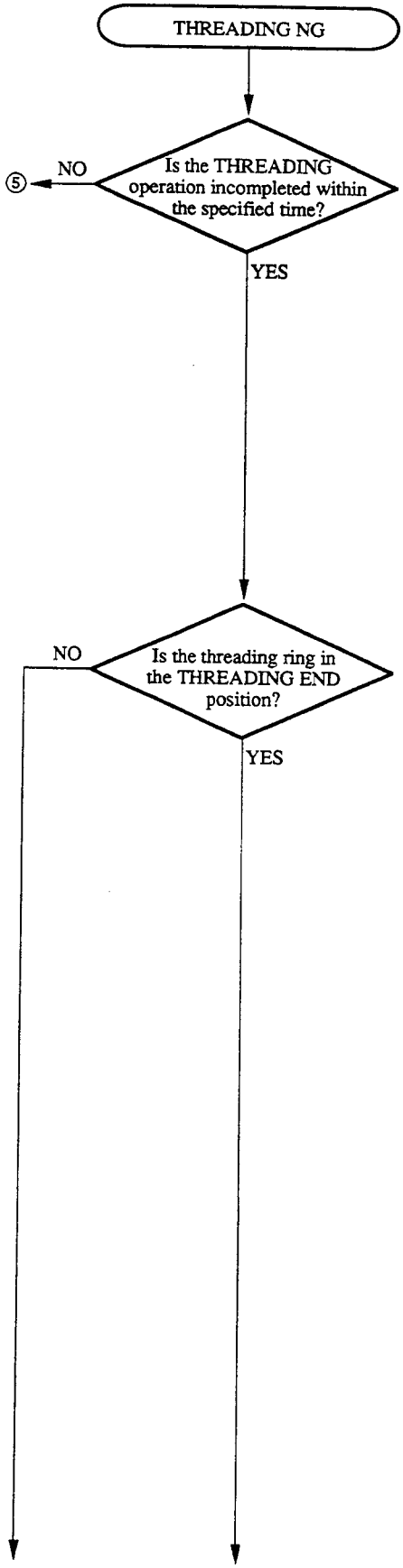


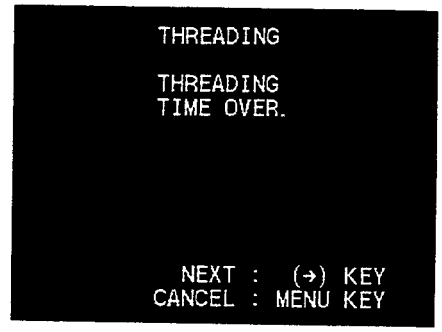


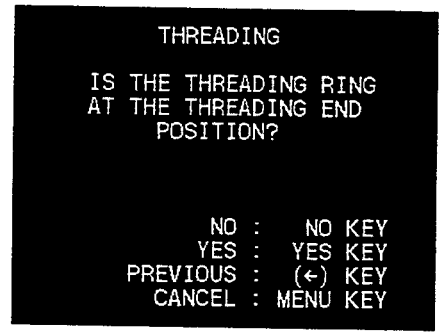
(9) THREADING Diagnosis



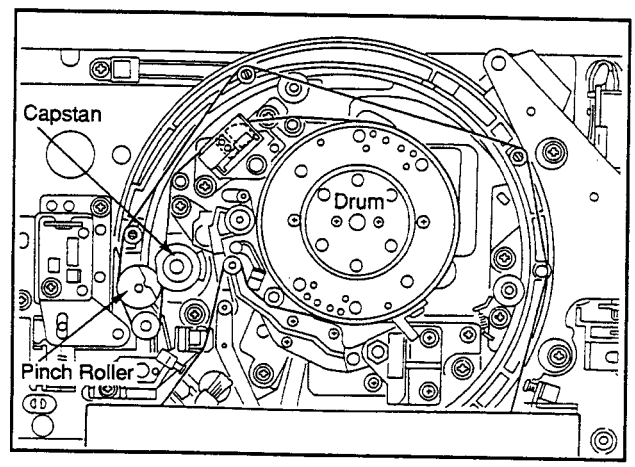
- The unit checks automatically.





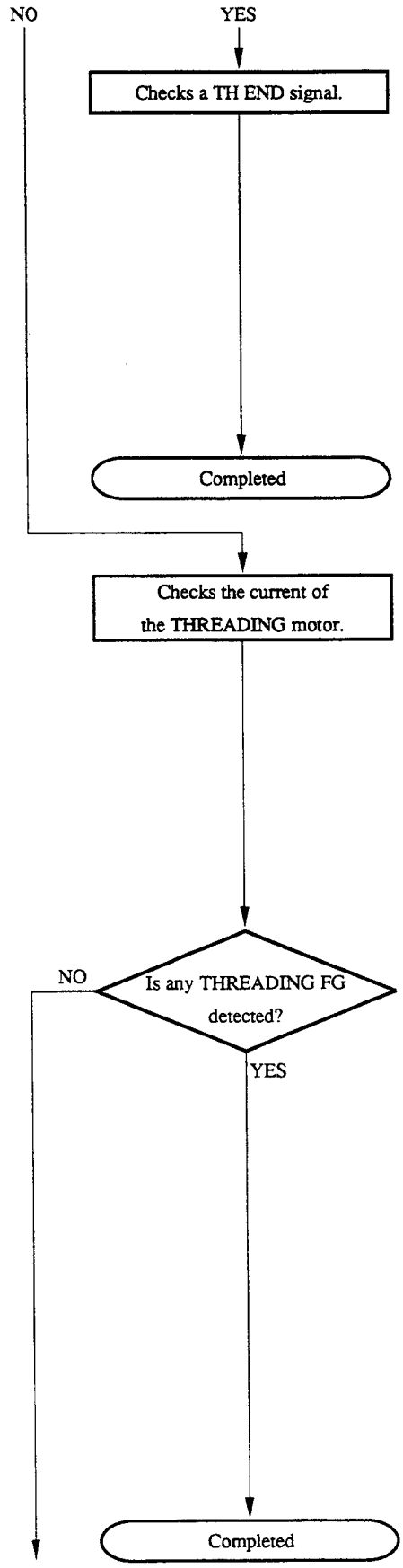


• Check the position of the threading ring.



Check : The pinch roller should be against the capstan motor.

4-126(1800/1800P/1600/1600P)
4-124(1400/1400P/1200/1200P)




```
THREADING

SOME OF FOLLOWING PARTS
   ARE DEFECTIVE.
1 TH./UNTH. END SENSOR
2 PTC-68 BOARD


      NEXT :  (→) KEY
  PREVIOUS :  (←) KEY
    CANCEL : MENU KEY
```

- The other cause than the above is that the voltage does not become more than 4 V because the TH END signal is shorted to other signal.

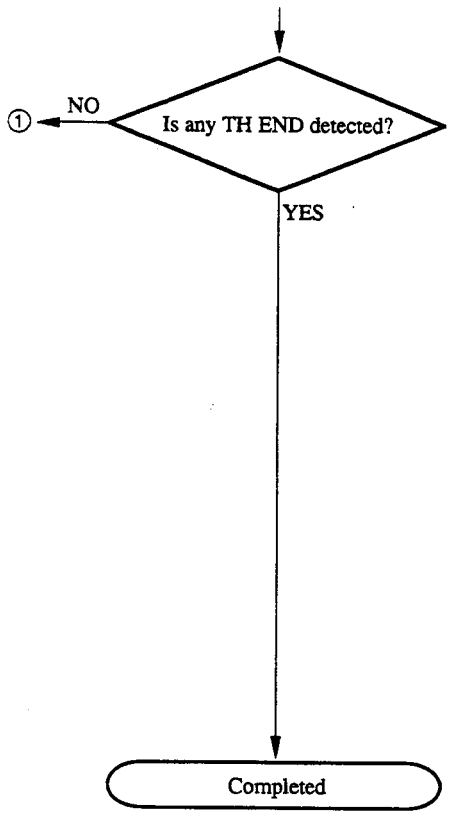
```
THREADING

THREADING MOTOR CURRENT

NOW CHECKING ...



    CANCEL : MENU KEY
```

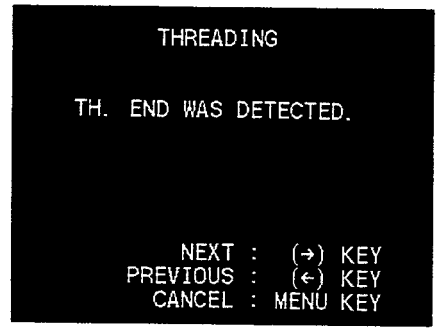
- The unit checks automatically.

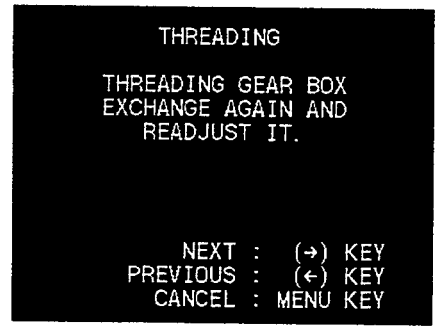
```
THREADING

TH. MOTOR WAS ROTATED.



      NEXT :  (→) KEY
  PREVIOUS :  (←) KEY
    CANCEL : MENU KEY
```

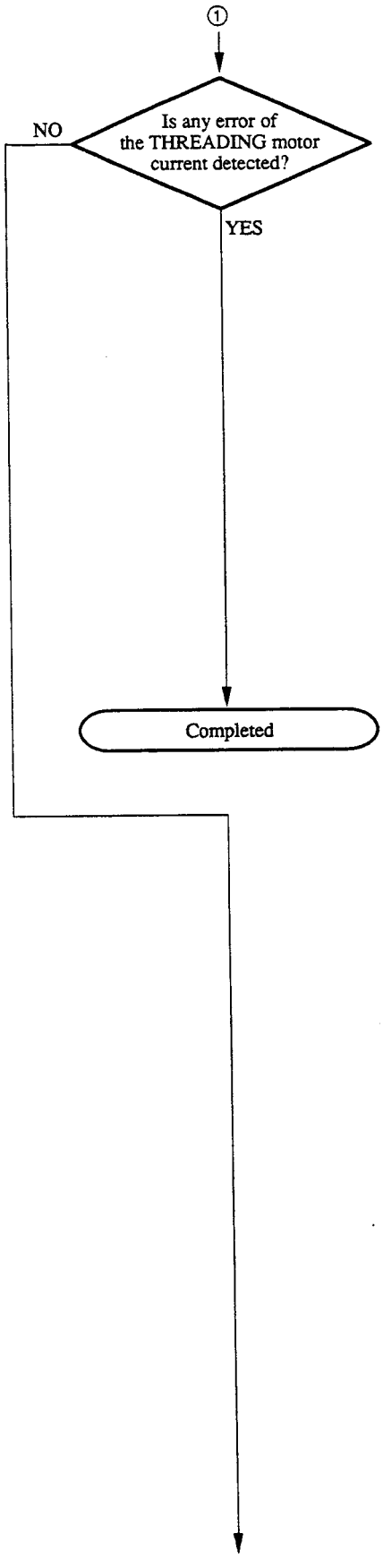
```
THREADING

THREADING GEAR BOX
EXCHANGE AGAIN AND
   READJUST IT.



      NEXT :  (→) KEY
  PREVIOUS :  (←) KEY
    CANCEL : MENU KEY
```

Continues to the next page.


NO
Is any TH END detected?
①
YES
Completed


THREADING
TH. END WAS DETECTED.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


THREADING
THREADING GEAR BOX
EXCHANGE AGAIN AND
READJUST IT.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



THREADING

THREADING MOTOR CURRENT
NO GOOD.

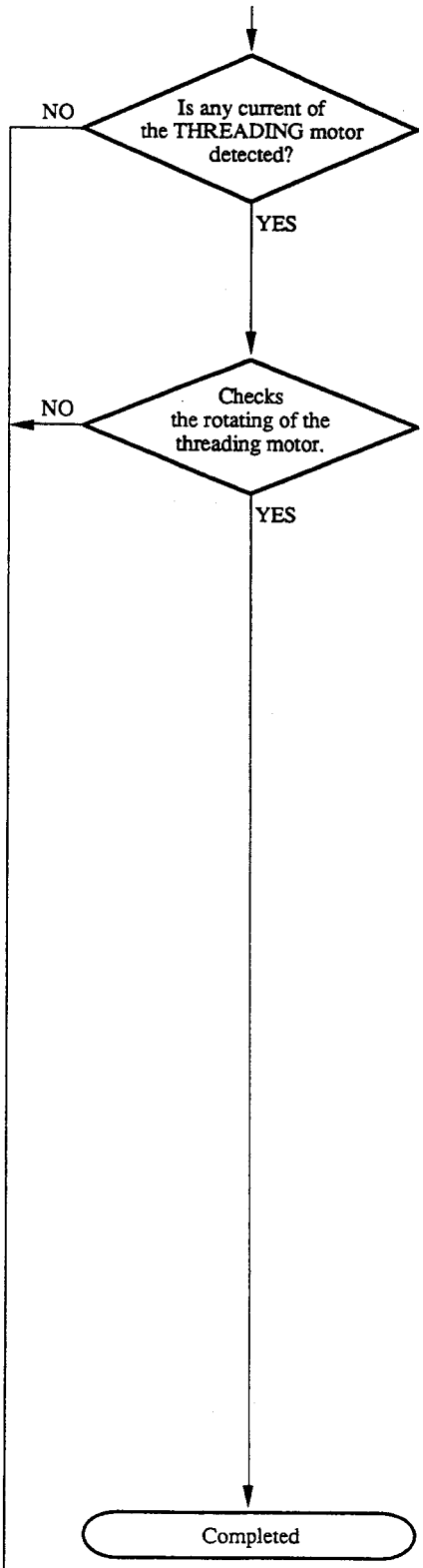
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

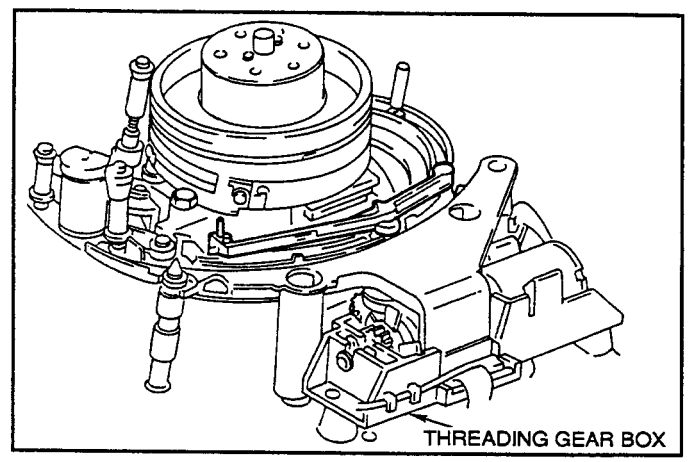
THREADING

THREADING
<MECHANICAL TROUBLE>
ROTATE A WARM GEAR AND
CHECK THE ACTIVATION.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

Continues to the next page.



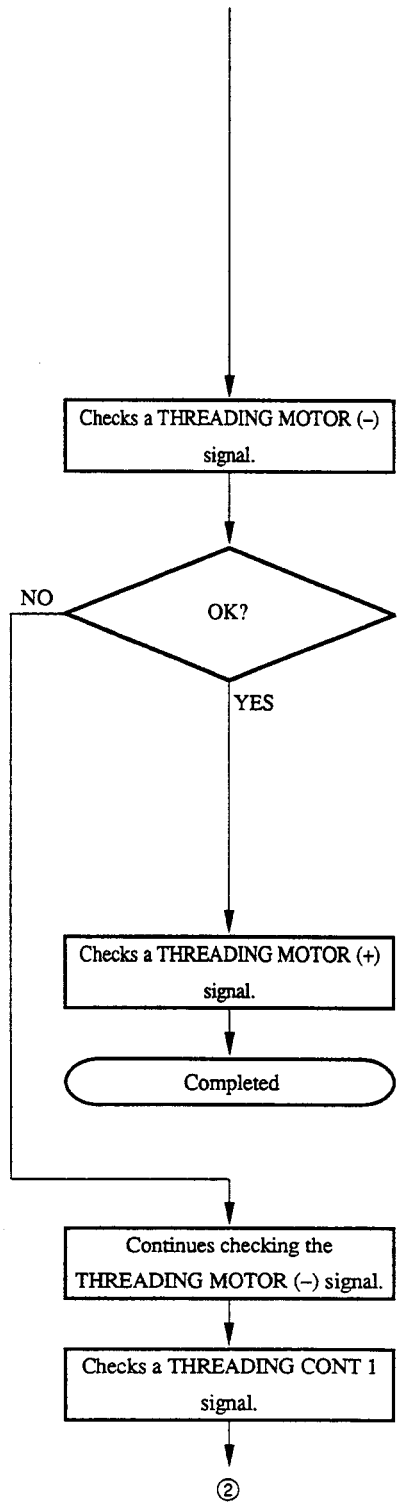


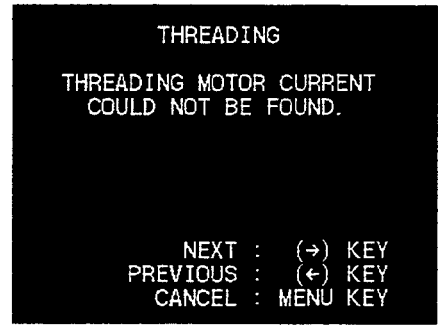

```
THREADING

DOES THE MOTOR ROTATE
WHILE PRESS (↑)/(↓)KEYS?

    THREADING :  (↑) KEY
  UNTHREADING :  (↓) KEY
           NO :   NO KEY
          YES :  YES KEY
     PREVIOUS :  (←) KEY
       CANCEL : MENU KEY
```

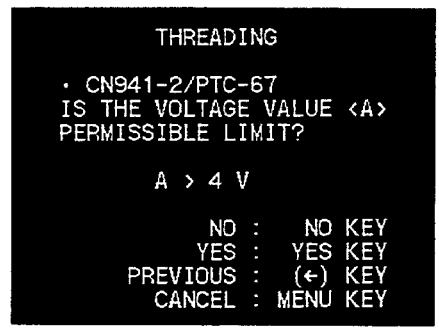
- Check that the threading motor is rotating free or not.

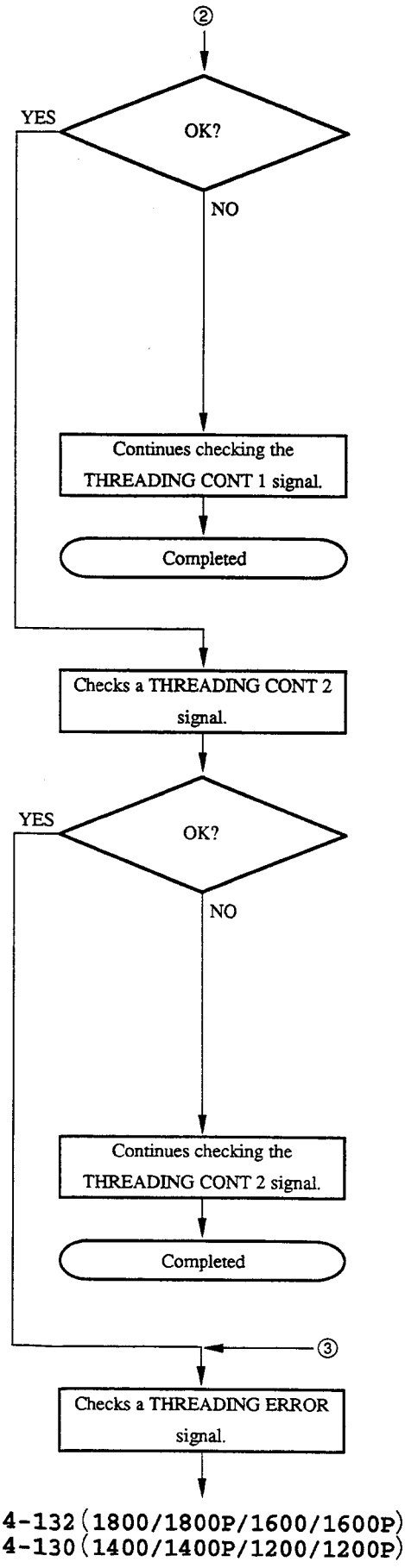
```
THREADING

FOLLOWING PART IS
DEFECTIVE.

• THREADING GEAR BOX


     NEXT :  (→) KEY
 PREVIOUS :  (←) KEY
   CANCEL : MENU KEY
```

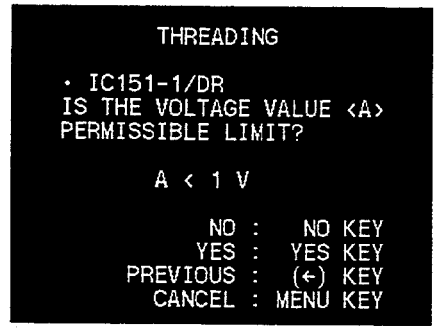
- The threading motor is rotating free.


Checks a THREADING MOTOR (–) signal.
NO
OK?
YES
Checks a THREADING MOTOR (+) signal.
Completed
Continues checking the THREADING MOTOR (–) signal.
Checks a THREADING CONT 1 signal.
②

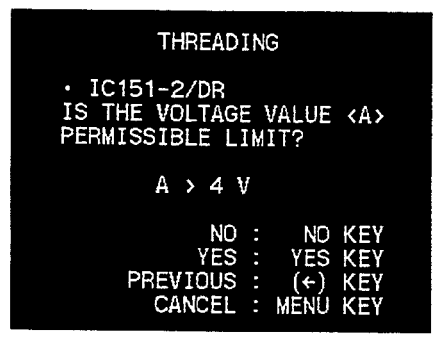

THREADING
THREADING MOTOR CURRENT COULD NOT BE FOUND.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


THREADING
• CN941-2/PTC-67
IS THE VOLTAGE VALUE <A> PERMISSIBLE LIMIT?
A > 4 V
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



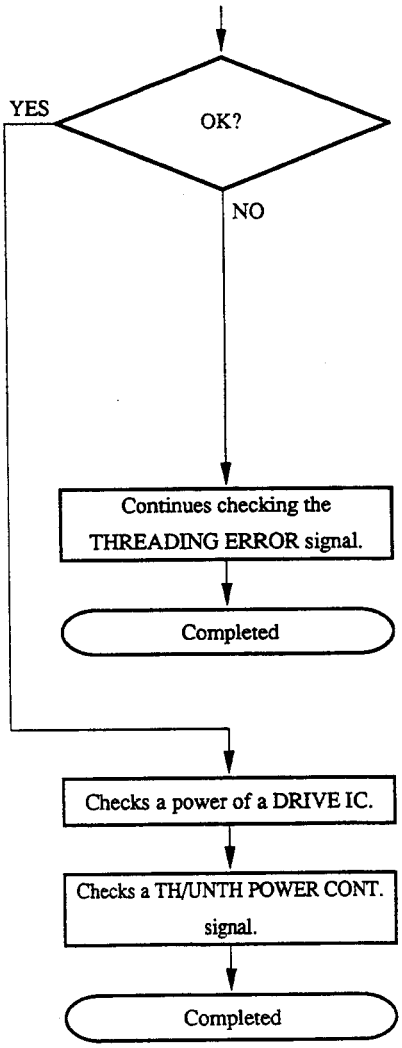


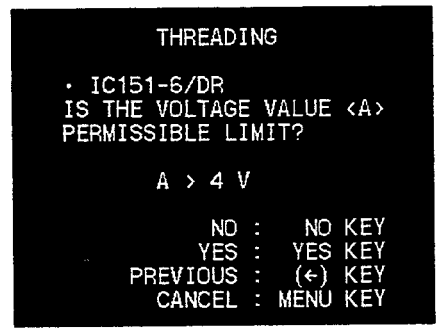
• IC151/DR-214 (L-4)



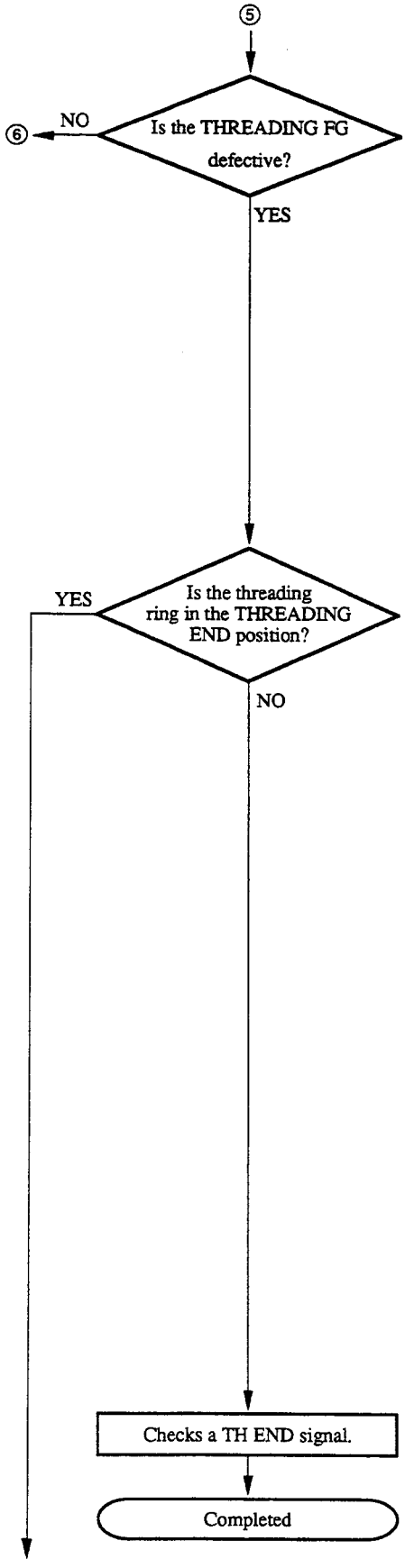
• IC151/DR-214 (L-4)

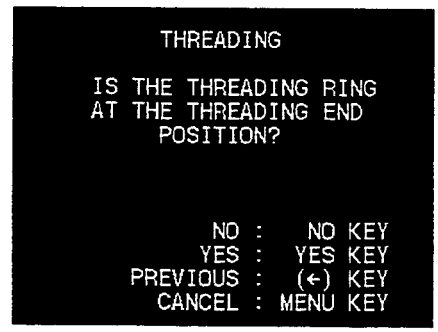
4-132 (1800/1800P/1600/1600P)
4-130 (1400/1400P/1200/1200P)



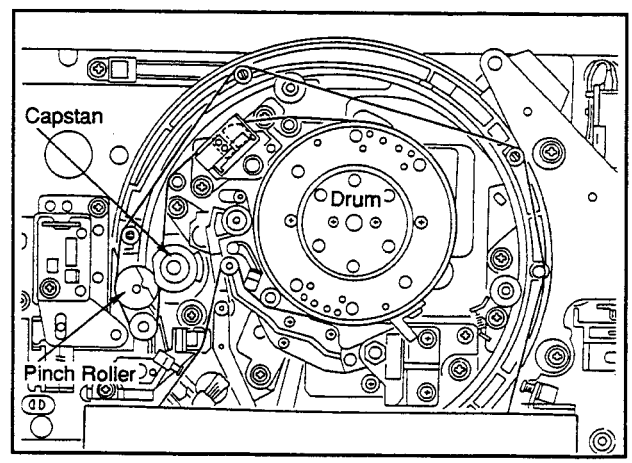


• IC151/DR-214 (L-4)

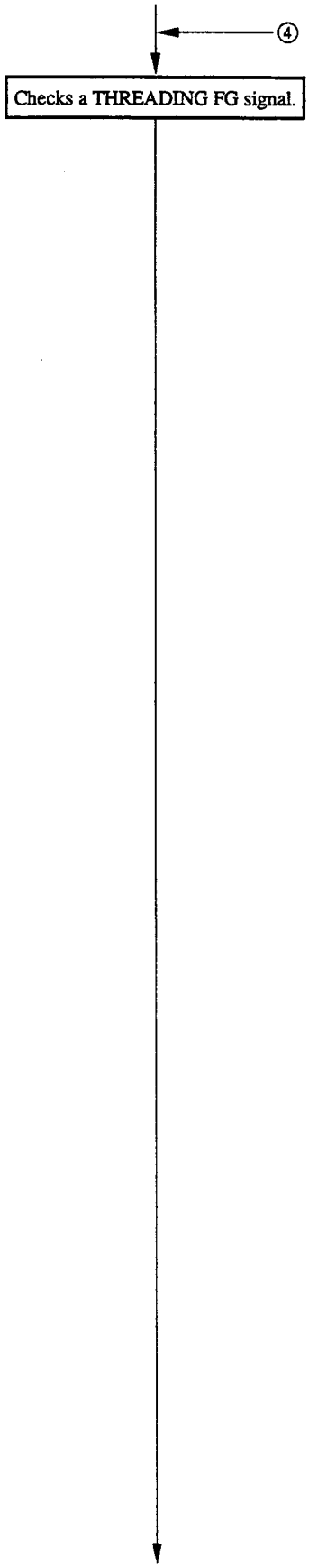




• Check the position of the threading ring.



Check : The pinch roller should be against the capstan motor.



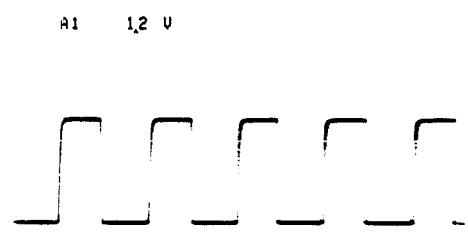

```
        THREADING

  IS THE FG DETECTED WHILE
     PRESS (↑)/(↓)KEYS?
      TH FG NO EXIST

     THREADING :  (↑) KEY
   UNTHREADING :  (↓) KEY
            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

- If this display is not changed after pressing the (↑) or (↓) key, press the NO key.

```
        THREADING

  IS THE FG DETECTED WHILE
     PRESS (↑)/(↓)KEYS?
       TH FG EXIST

     THREADING :  (↑) KEY
   UNTHREADING :  (↓) KEY
            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

- If this display is not changed after pressing the (↑) of (↓) key, press the YES key.

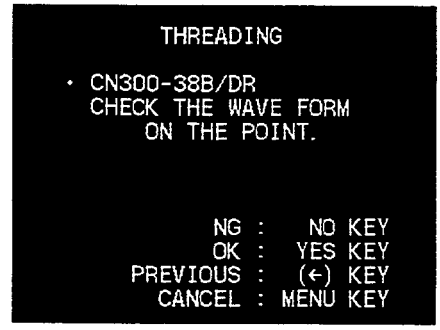
```
        THREADING

  · CN108-15A/SS
    CHECK THE WAVE FORM
       ON THE POINT.



            NG :   NO KEY
            OK :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

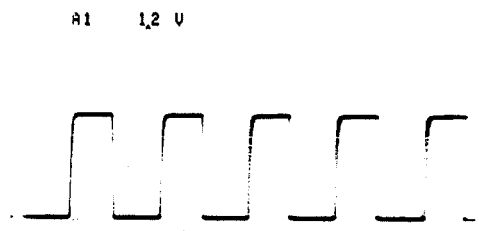


- CN108-15A/SS-53 (K-6) waveform

2V 1ms

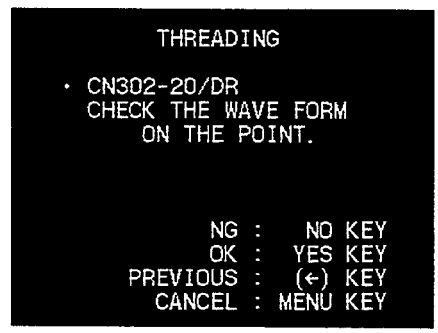
Continues to the next page.

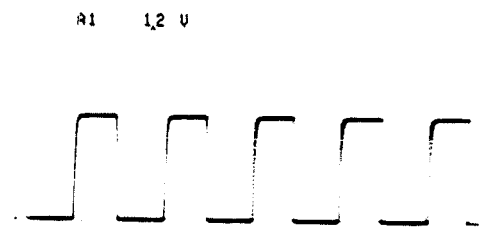




• CN300-38B/DR-214 (H-1) waveform

2V 1ms

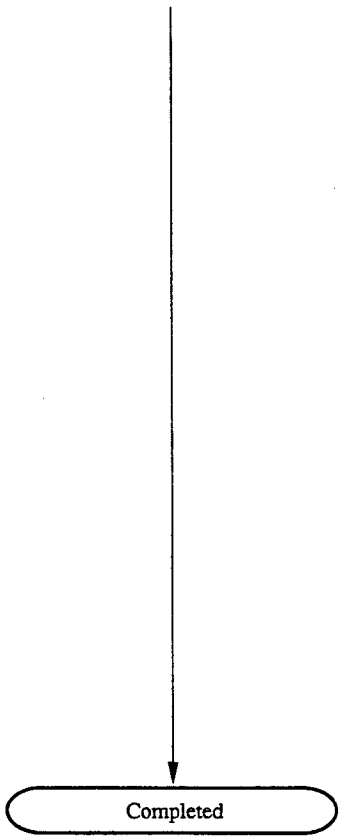


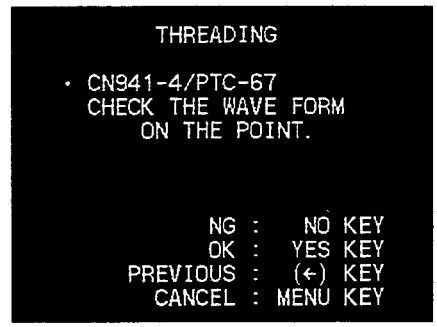


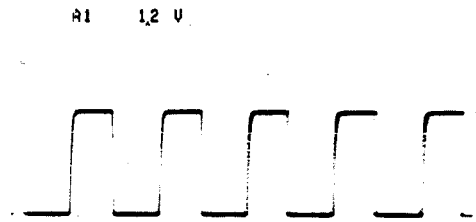
• CN302-20/DR-214 (H-5) waveform

2V 1ms

4-136 (1800/1800P/1600/1600P)
4-134 (1400/1400P/1200/1200P)

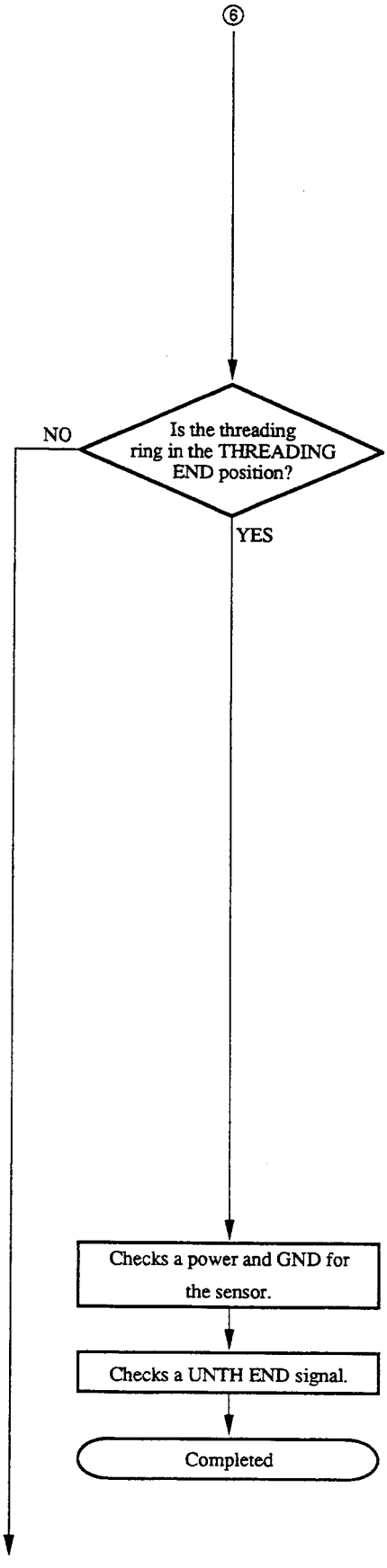


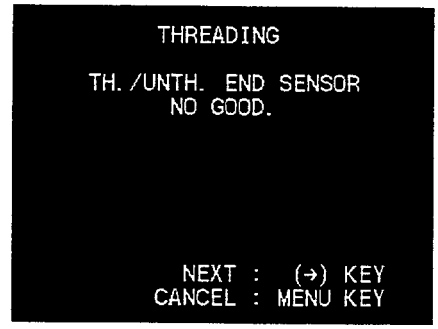


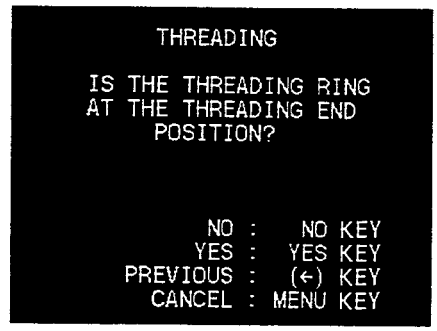


• CN941-4/PTC-67 waveform

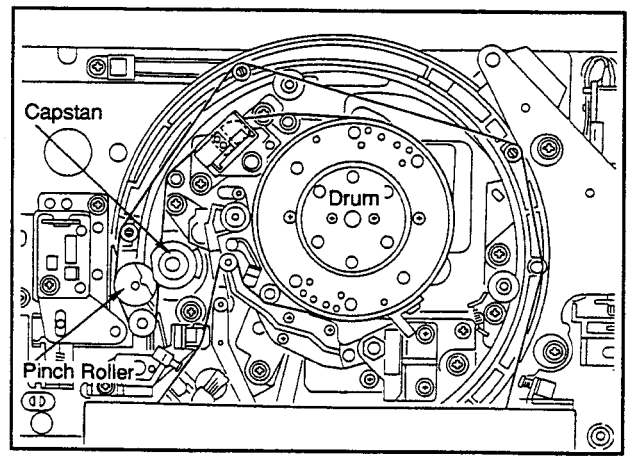
2V 1ms



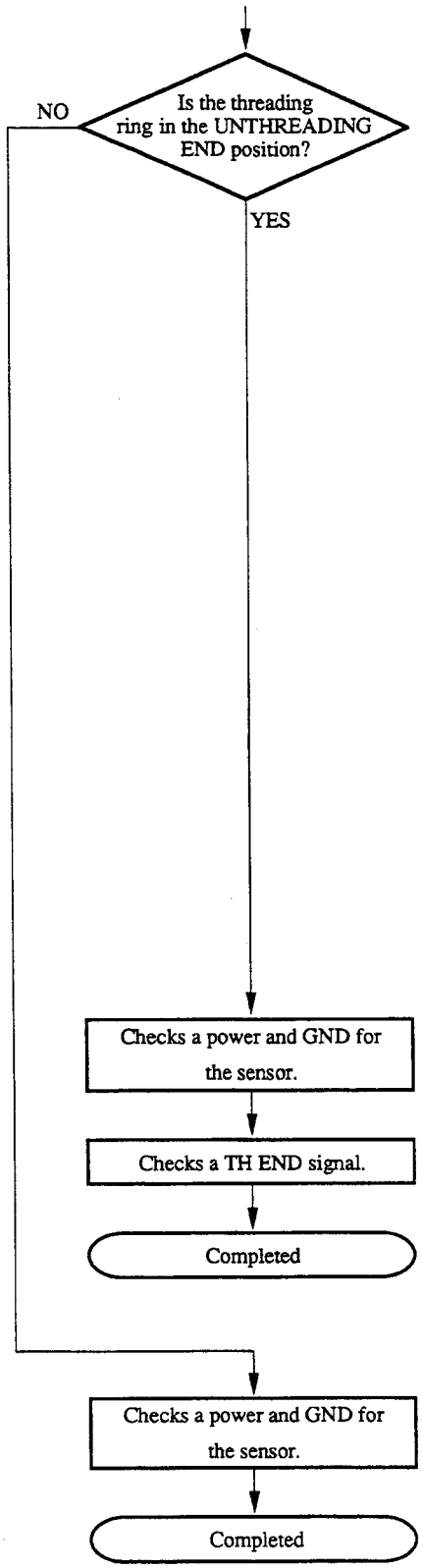


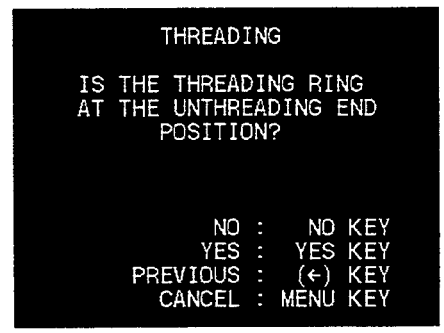


• Check the position of the threading ring.

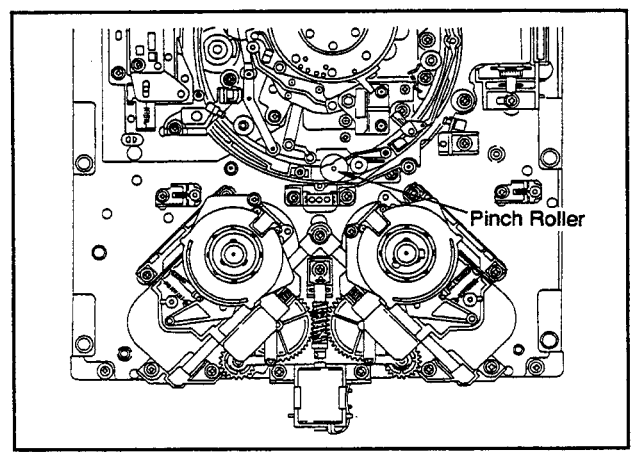


Check : The pinch roller should be against the capstan motor.

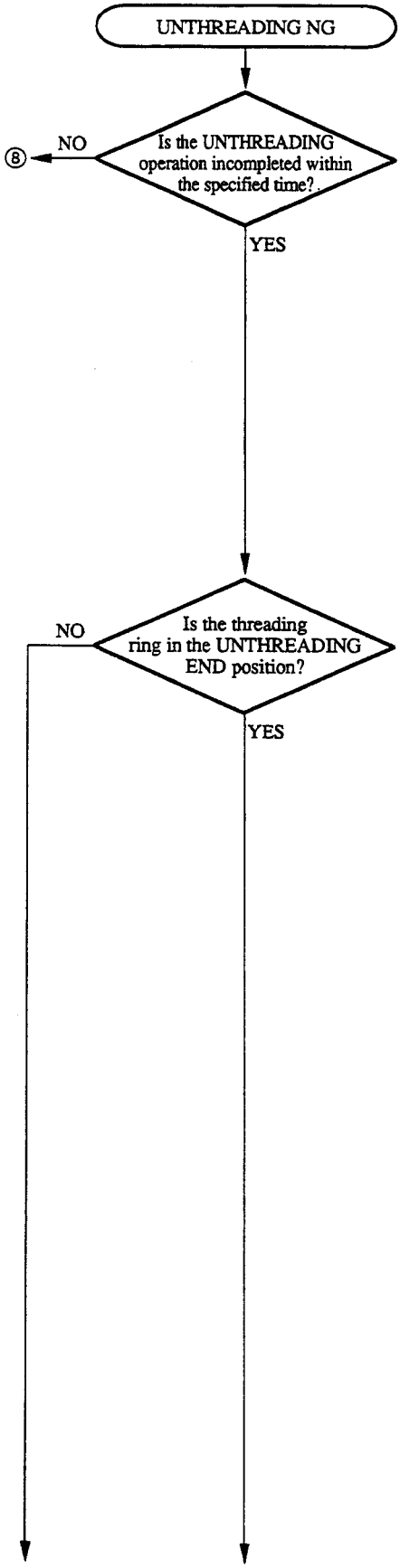

Is the threading ring in the UNTHREADING END position?
NO
YES
Checks a power and GND for the sensor.
Checks a TH END signal.
Completed
Checks a power and GND for the sensor.
Completed

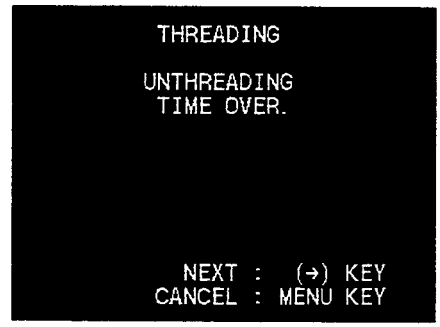


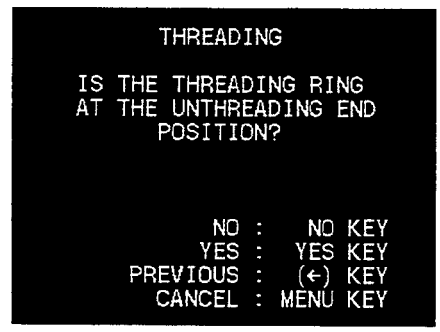
- Check the position of the threading ring.



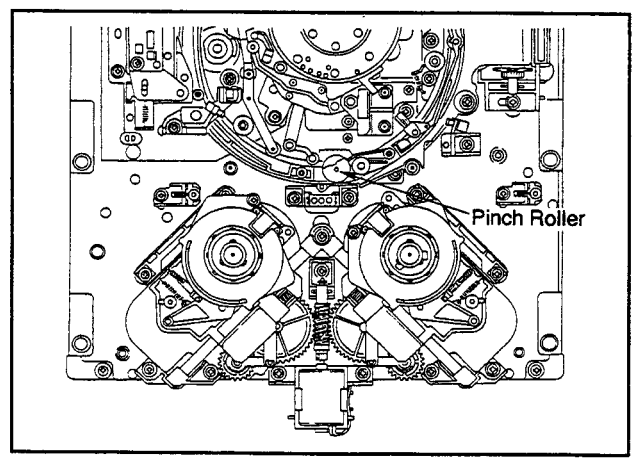
Check : The pinch roller should be in the position as shown in the figure.





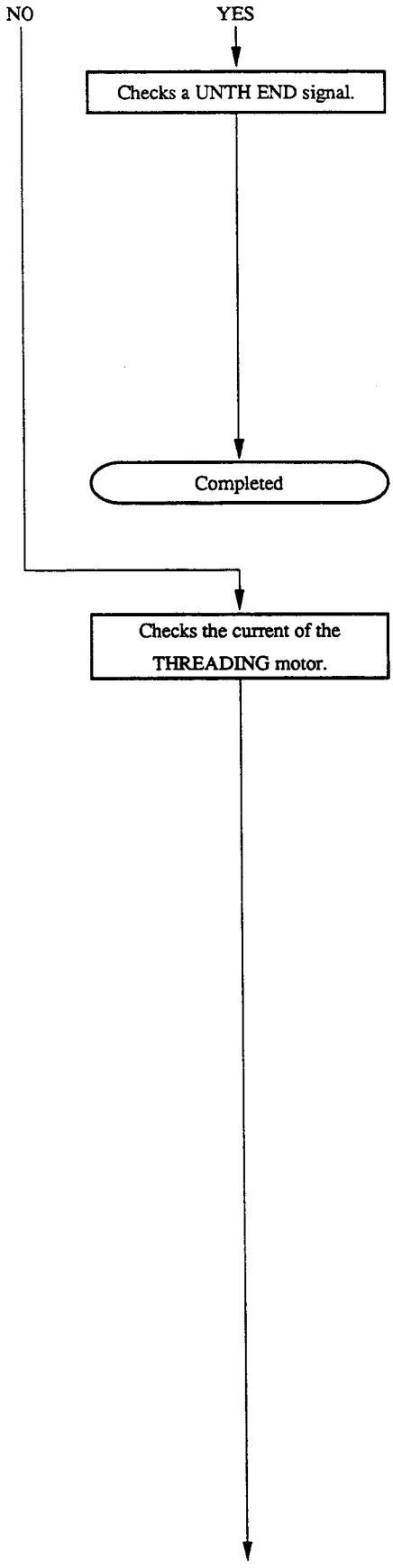


• Check the position of the threading ring.



Check : The pinch roller should be in the position as shown in the figure.

4-140 (1800/1800P/1600/1600P)
4-138 (1400/1400P/1200/1200P)



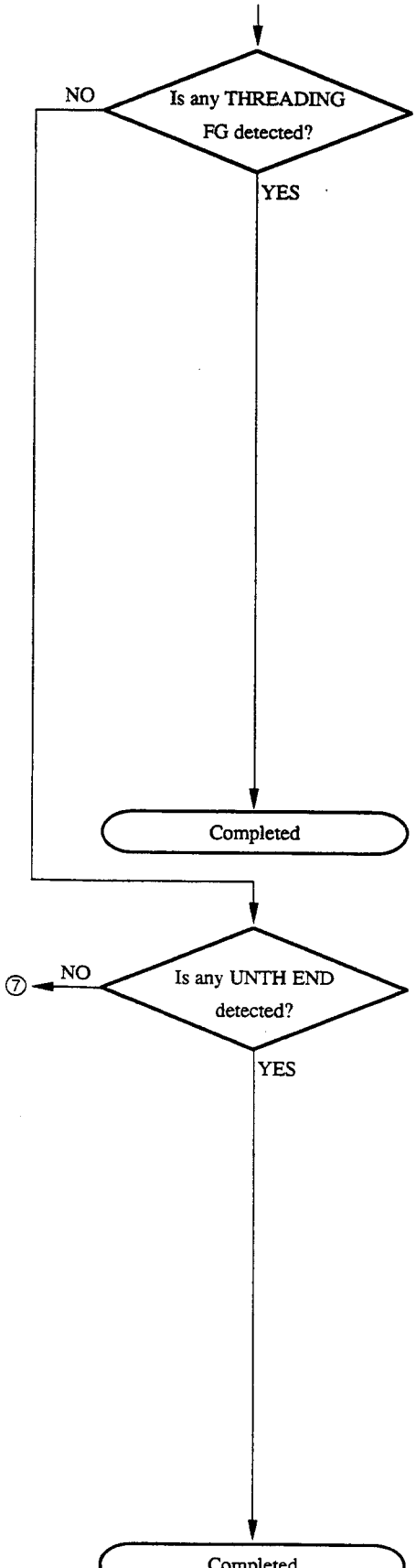

```
THREADING

SOME OF FOLLOWING PARTS
   ARE DEFECTIVE.
1 TH./UNTH. END SENSOR
2 PTC-68 BOARD


        NEXT :  (→) KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- The other cause than the above is that the voltage does not become more than 4 V because the UNTH END signal is shorted to other signal.

```
THREADING

THREADING MOTOR CURRENT

NOW CHECKING ...



      CANCEL : MENU KEY
```

- The unit checks automatically.

Continues to the next page.



THREADING

TH. MOTOR WAS ROTATED.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

THREADING

THREADING GEAR BOX
EXCHANGE AGAIN AND
READJUST IT.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

THREADING

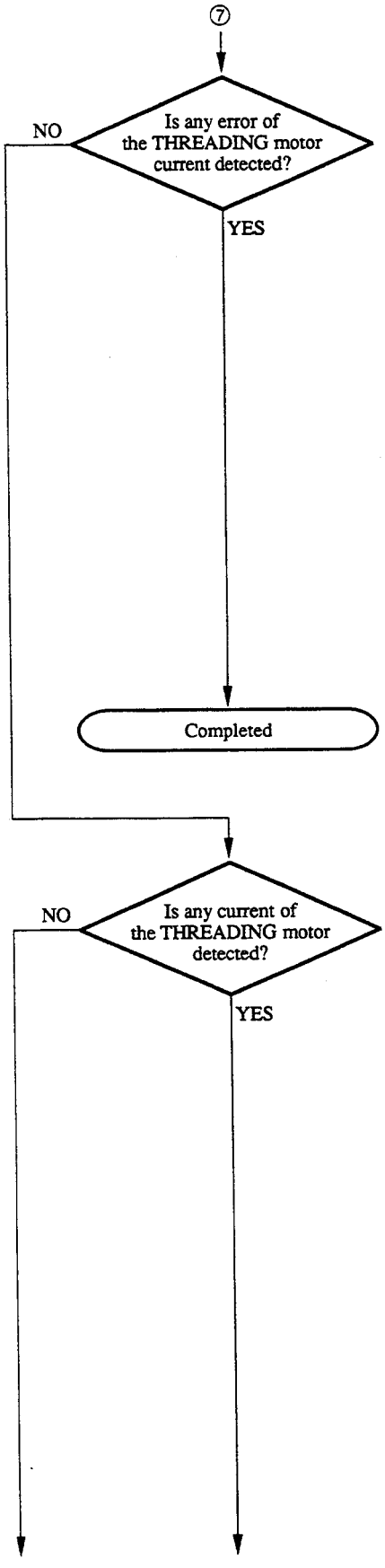
UNTH. END WAS DETECTED.

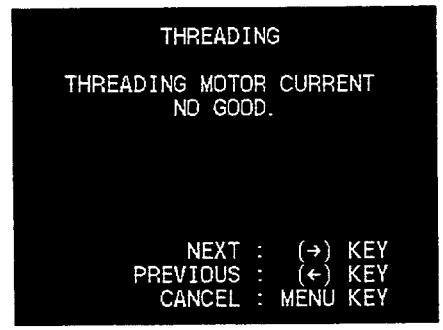
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

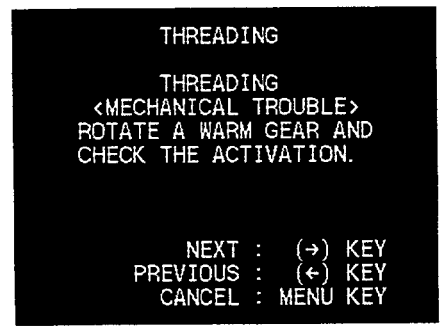
THREADING

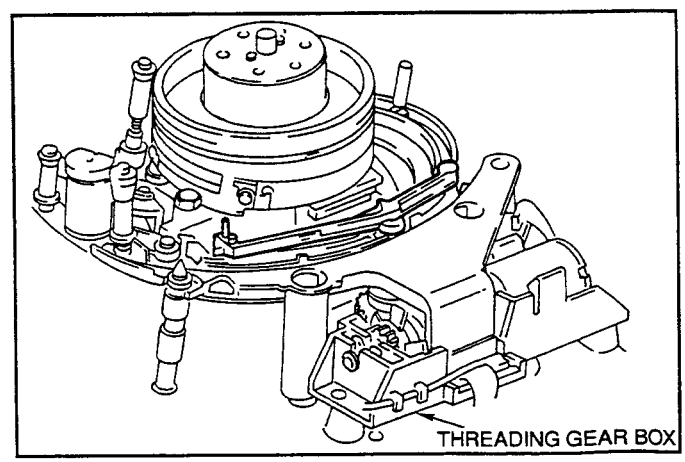
THREADING GEAR BOX
EXCHANGE AGAIN AND
READJUST IT.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY









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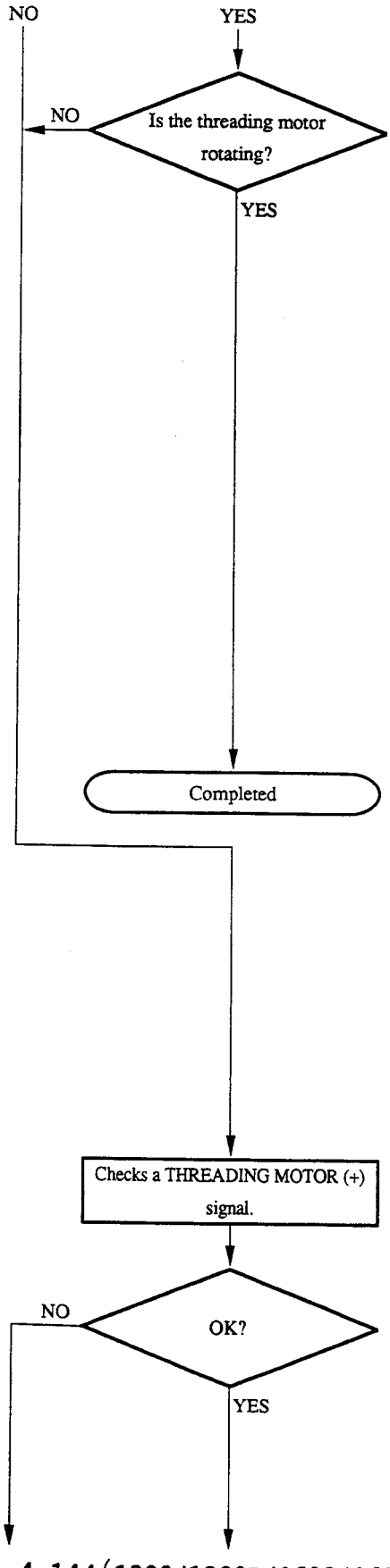


THREADING

DOES THE MOTOR ROTATE
WHILE PRESS (↑)/(↓)KEYS?

THREADING : (↑) KEY
UNTHREADING : (↓) KEY
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- Check that the threading motor is rotating free or not.

THREADING

FOLLOWING PART IS
DEFECTIVE.

· THREADING GEAR BOX

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- The threading motor is rotating free.

THREADING

THREADING MOTOR CURRENT
COULD NOT BE FOUND.

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

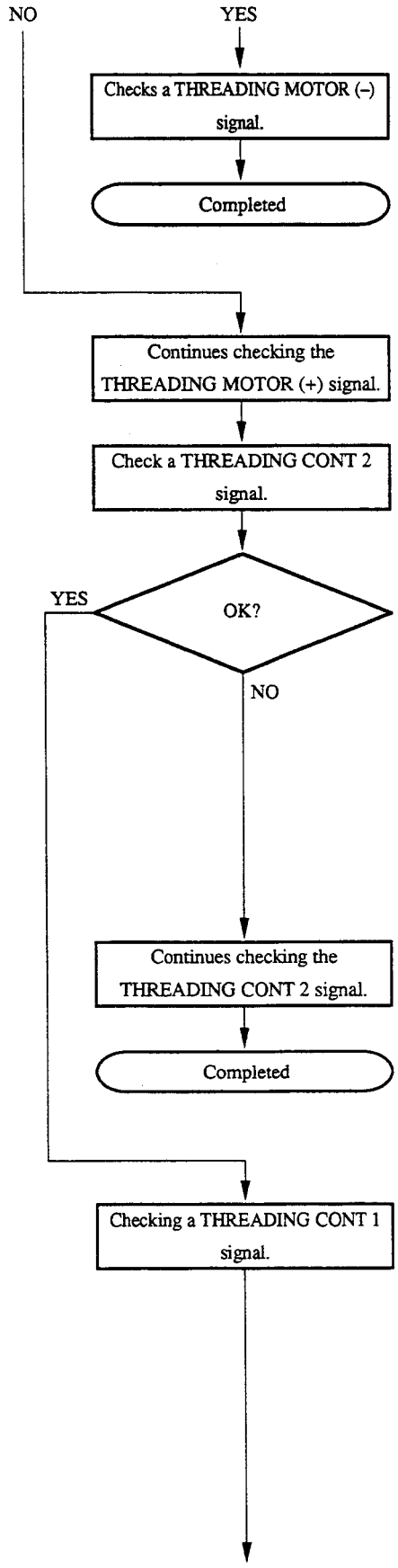
THREADING

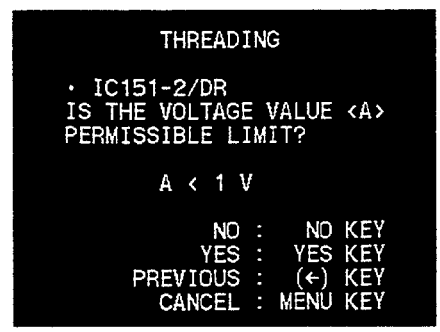
· CN941-1/PTC-67
IS THE VOLTAGE VALUE <A>
PERMISSIBLE LIMIT?

A > 4 V

NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

4-144(1800/1800P/1600/1600P)
4-142(1400/1400P/1200/1200P)





• IC151/DR-214 (L-4)

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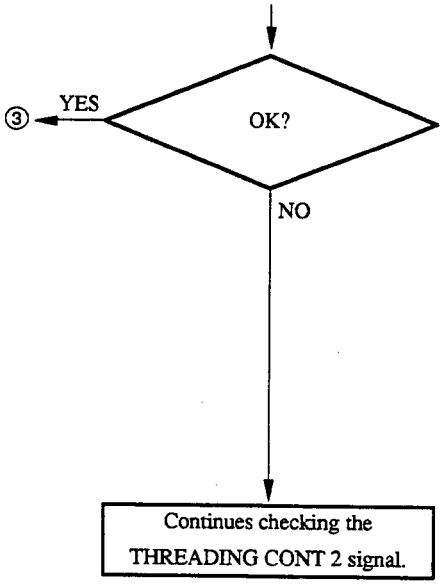


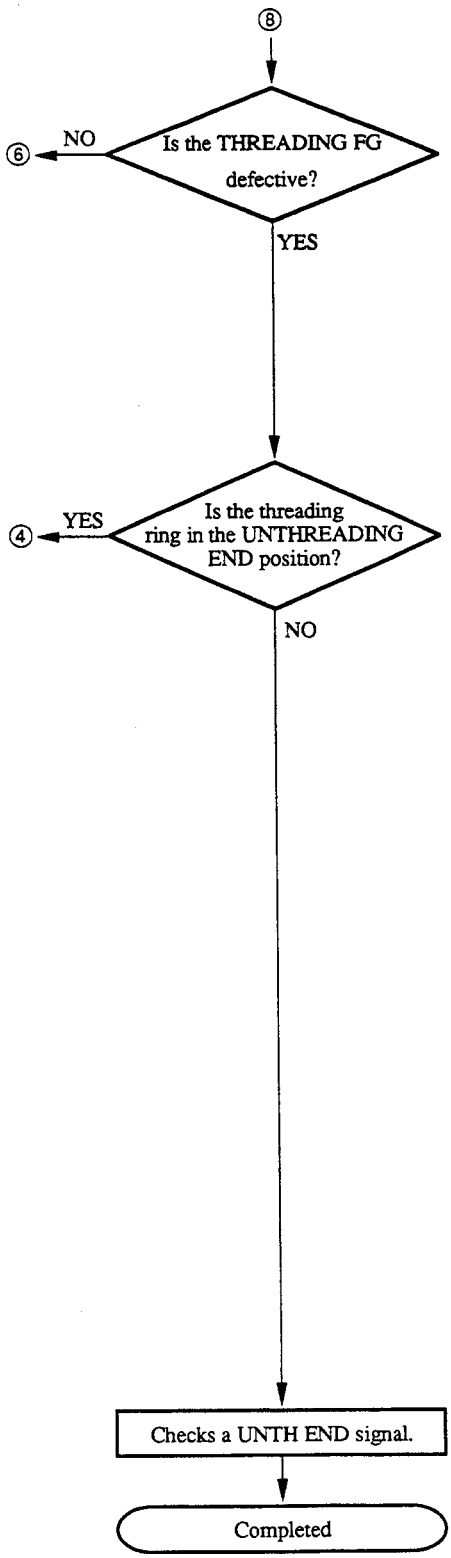
THREADING

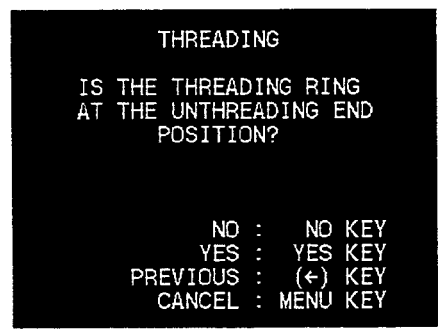
• IC151-1/DR
IS THE VOLTAGE VALUE <A>
PERMISSIBLE LIMIT?

A > 4 V

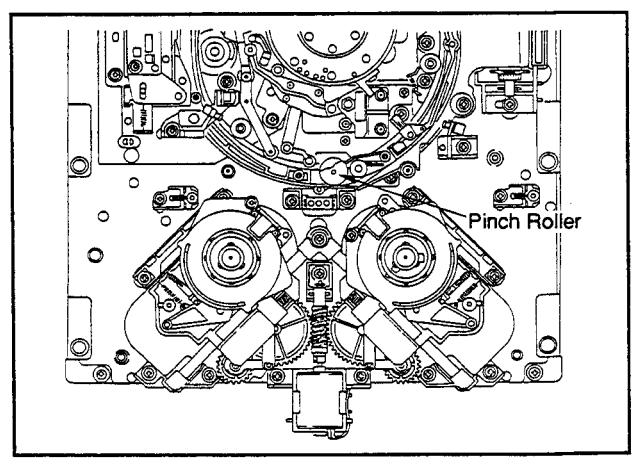
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• IC151/DR-214 (L-4)



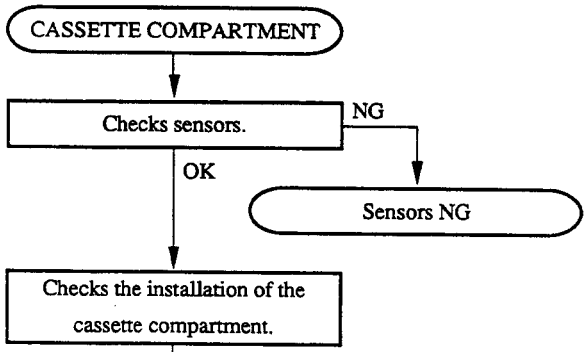


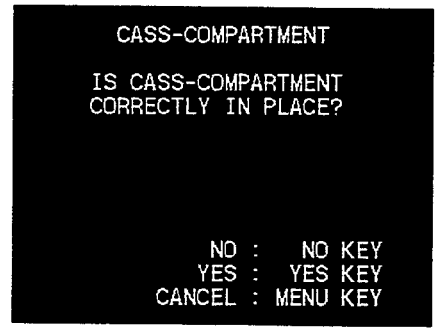
• Check the position of the threading ring.



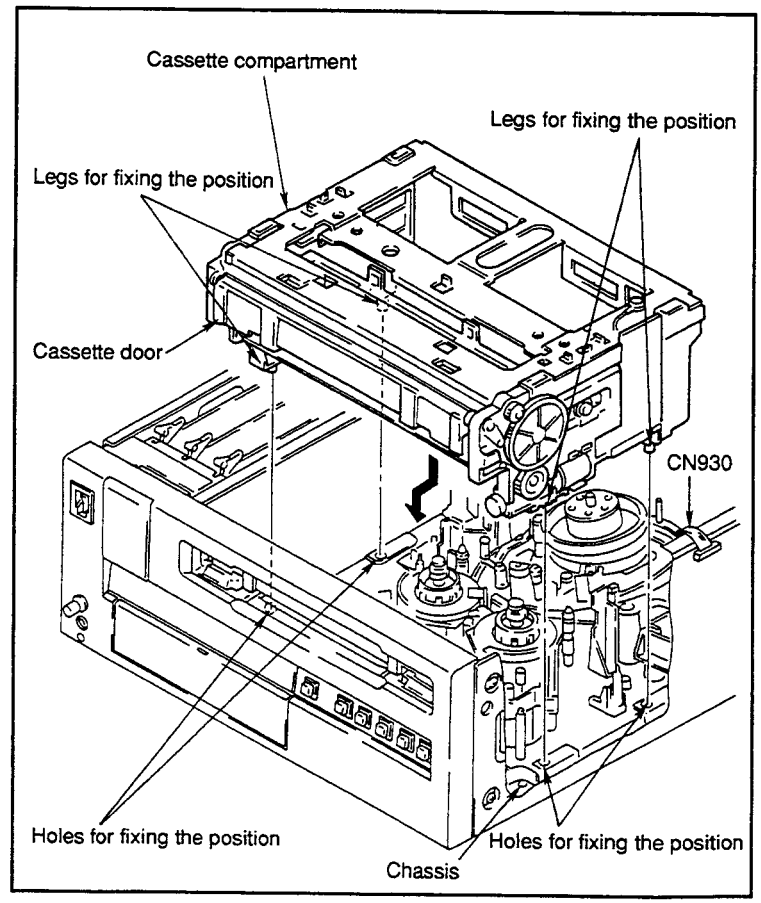
Check : The pinch roller should be in the position as shown in the figure.

(10) CASSETTE COMPARTMENT Diagnosis





- Installation of the cassette compartment

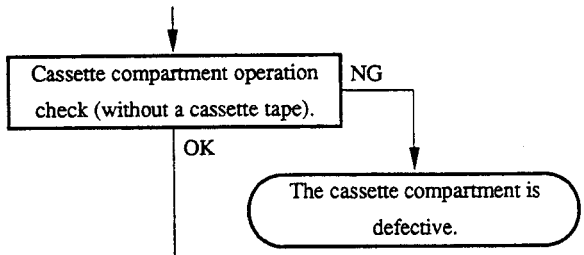


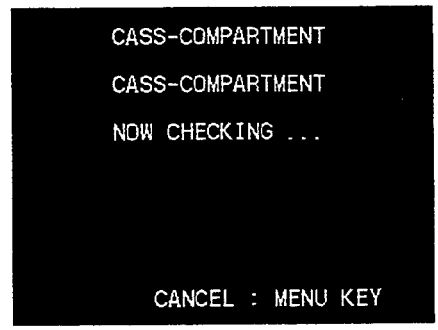
- Set the harnesses of the connector (CN930) so that it is not put between the chassis.
  Install the cassette compartment.

  Note : At this time, confirm that the four legs of the cassette compartment for fixing the position are the holes of the chassis for fixing the position.

- After confirming that the cassette compartment is fixed to the chassis, install the cassette compartment stay and connect the connector (CN930) on the CL-25 board.

4-148(1800/1800P/1600/1600P)
4-146(1400/1400P/1200/1200P)



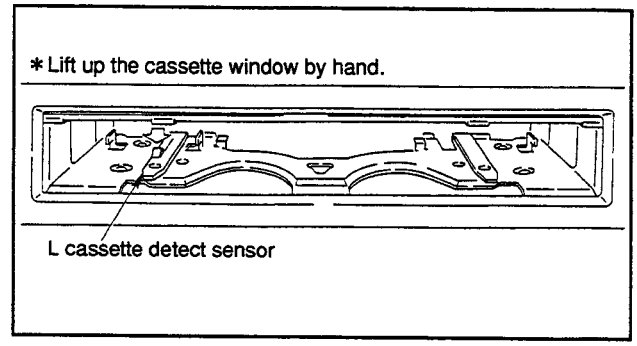


- The unit checks automatically.

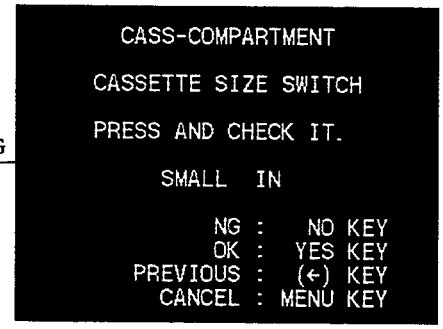
Continues to the next page.

Checks a L cassette detect sensor.

- Check the operation of the L cassette detect sensor as a preparation to insert a cassette tape.

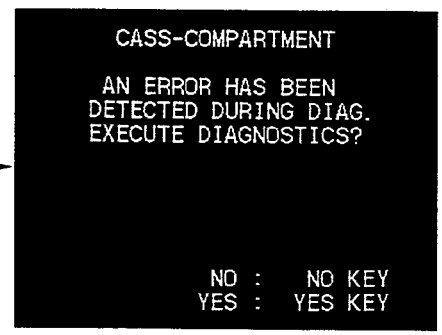


NG



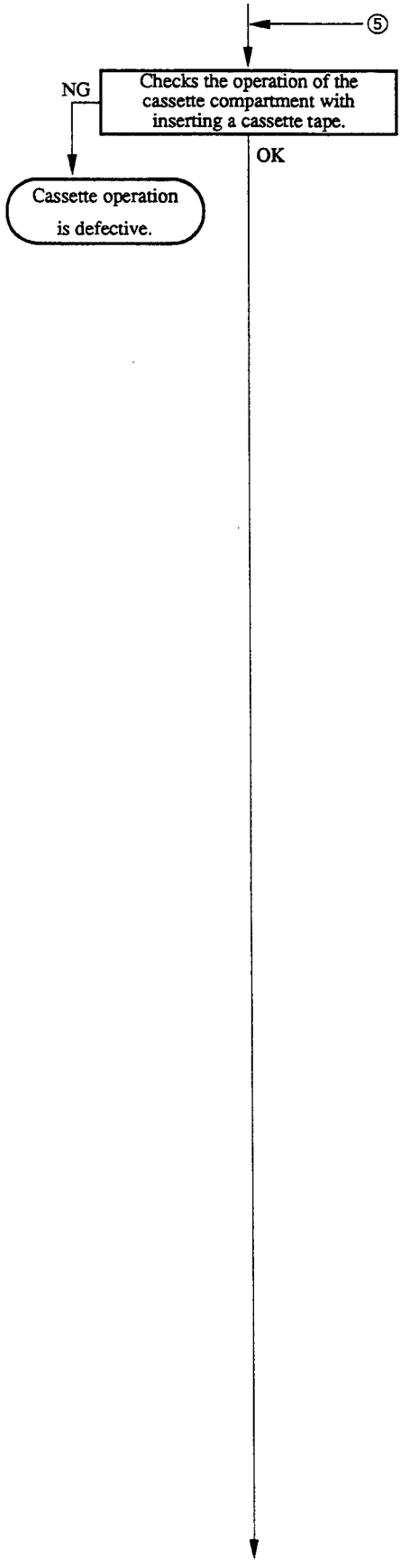
<How to decide>

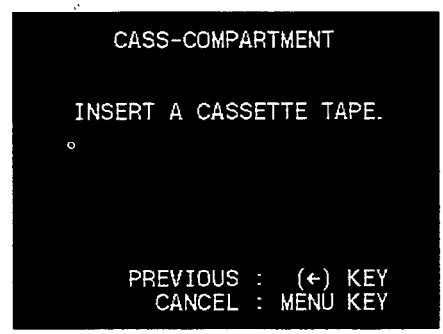
	Not pressing by hand	Pressing by hand	Decision
Display	S CASSETTE	L CASSETTE	OK
	S CASSETTE	S CASSETTE	NG
	L CASSETTE	–	NG



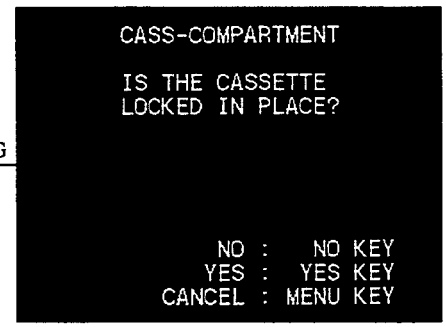
- The sensor is defective.
  When diagnosing the sensor, press the YES key and enter the diagnosis of the sensor.

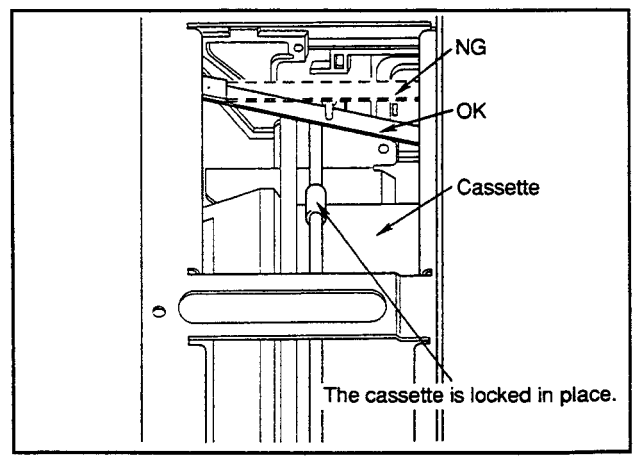
4-150(1800/1800P/1600/1600P)
4-148(1400/1400P/1200/1200P)

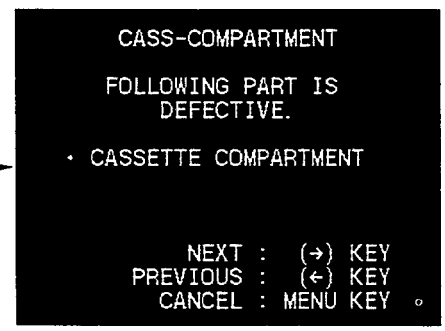




- Insert a large or small cassette tape into the unit.

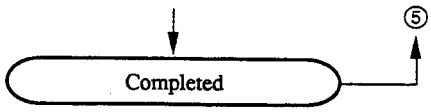


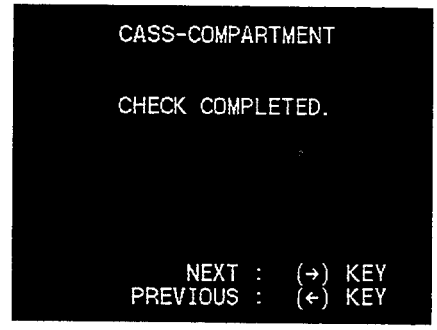




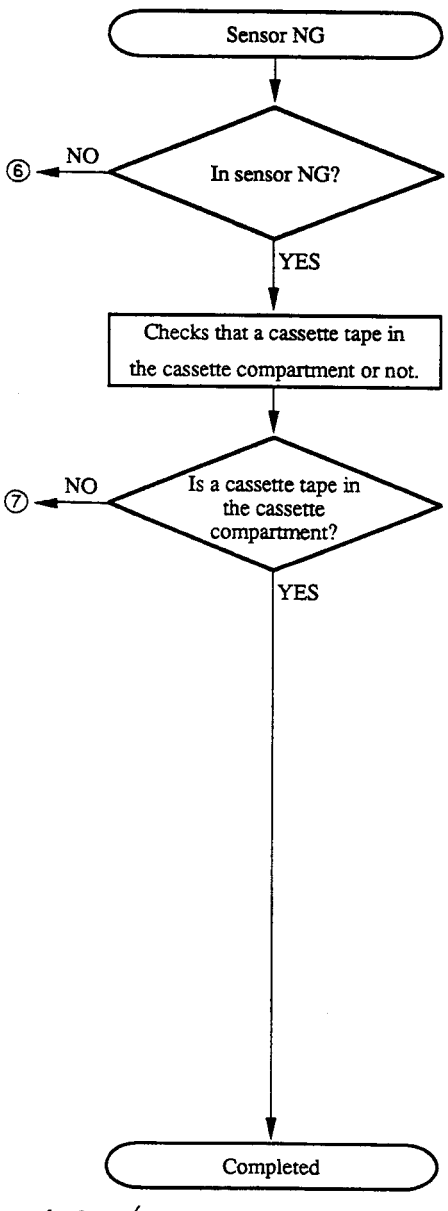
- The cassette compartment without pressing a cassette tape surely is installed. Replace or repair the cassette compartment.

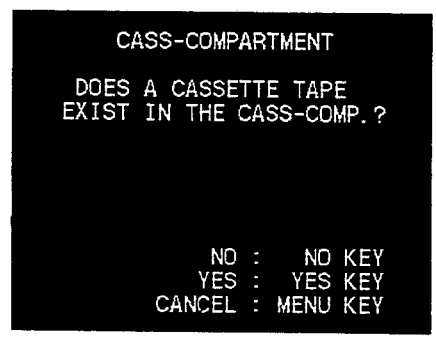
Continues to the next page.

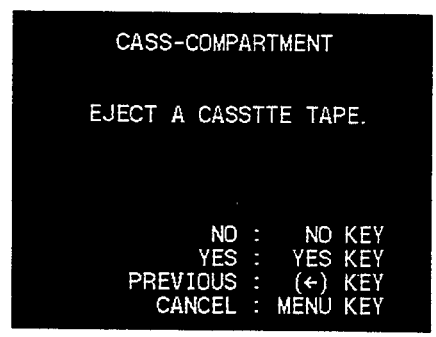


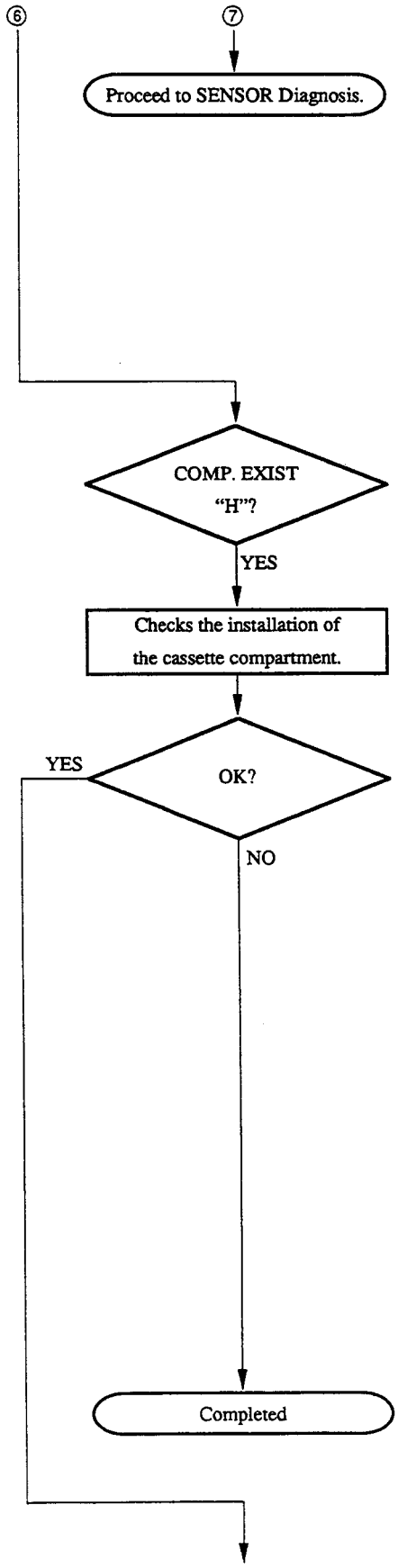


- When you would like to check the operation of the cassette compartment as to both large and small cassette tape, press the (←) key and insert the cassette tape of another size into the unit.









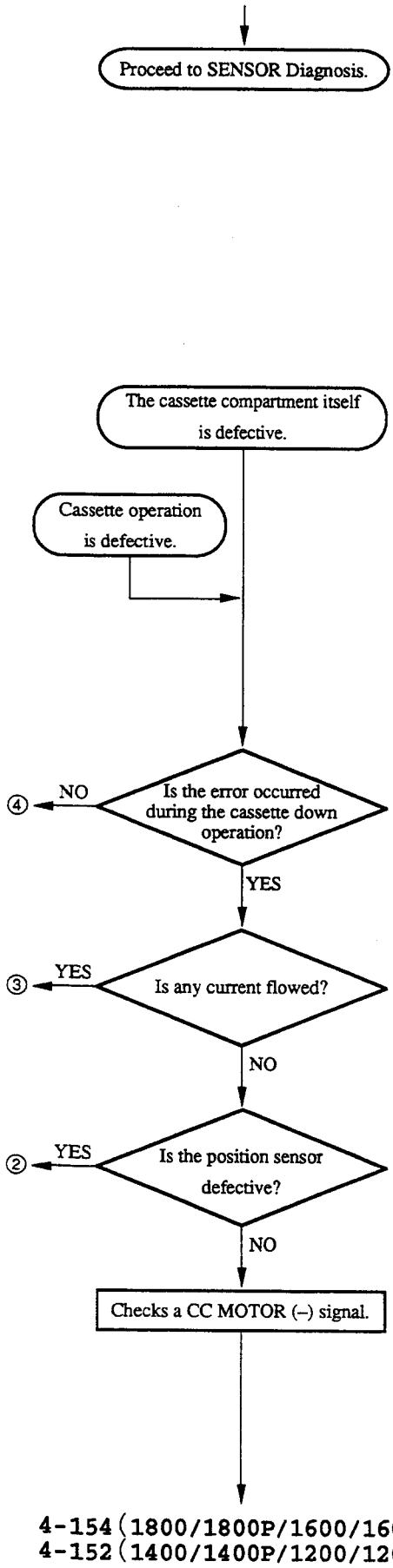

```
CASS-COMPARTMENT

AN ERROR HAS BEEN
DETECTED DURING DIAG.
EXECUTE DIAGNOSTICS?


NO :   NO KEY
YES :  YES KEY
```

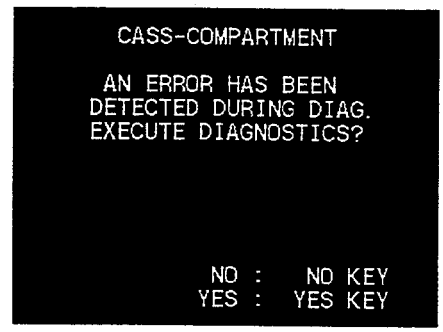
```
CASS-COMPARTMENT

IS CASS-COMPARTMENT
CORRECTLY IN PLACE?


NO :   NO KEY
YES :  YES KEY
CANCEL : MENU KEY
```

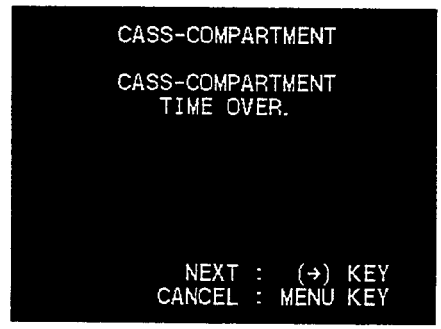
- Check that harnesses are connected correctly or not.

```
CASS-COMPARTMENT

DISCONTINE DIAGNOSTICS,
POWER OFF AND INSTALL
A CASS-COMPARTMENT.


NEXT :   (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
```

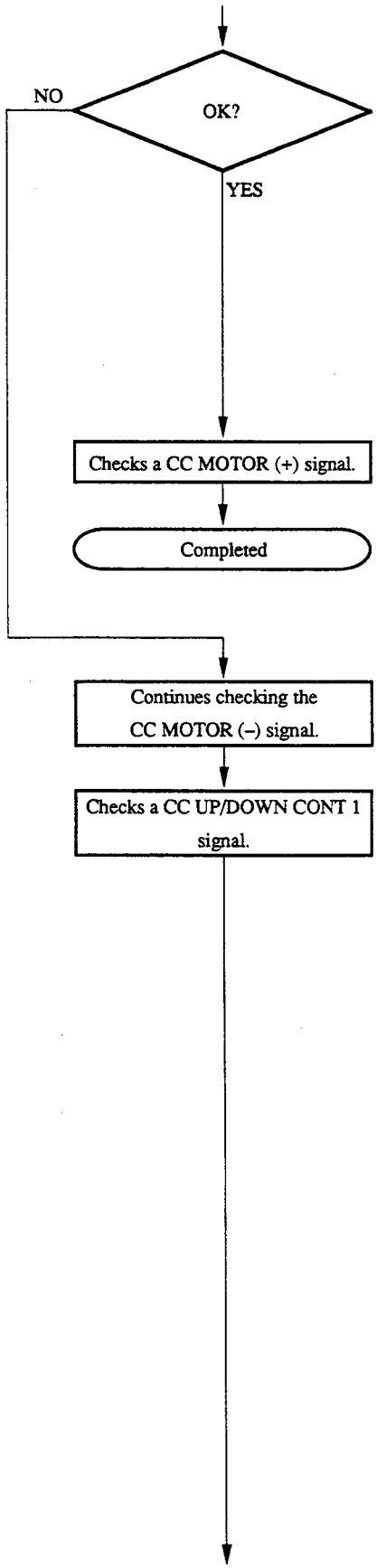
Continues to the next page.

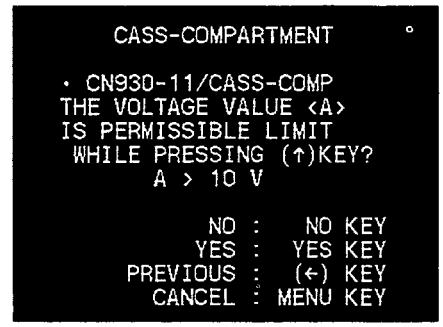






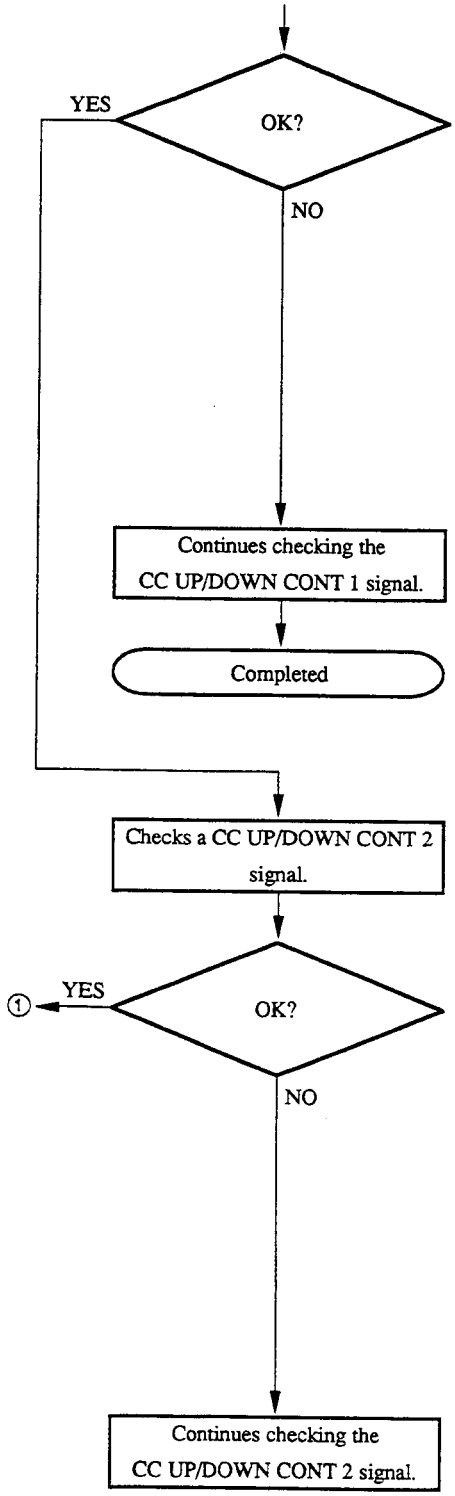
4-154 (1800/1800P/1600/1600P)
4-152 (1400/1400P/1200/1200P)





- Check that the voltage (A) is more than 10 V while pressing the (↑) key.

Continues to the next page.




```
      CASS-COMPARTMENT

 • IC153-1/DR
THE VOLTAGE VALUE <A>
IS PERMISSIBLE LIMIT
 WHILE PRESSING (↑)KEY?
       A < 1 V

            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :   (←) KEY
        CANCEL : MENU KEY
```

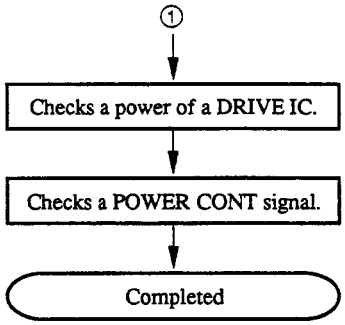
• IC153/DR-214 (L-2)

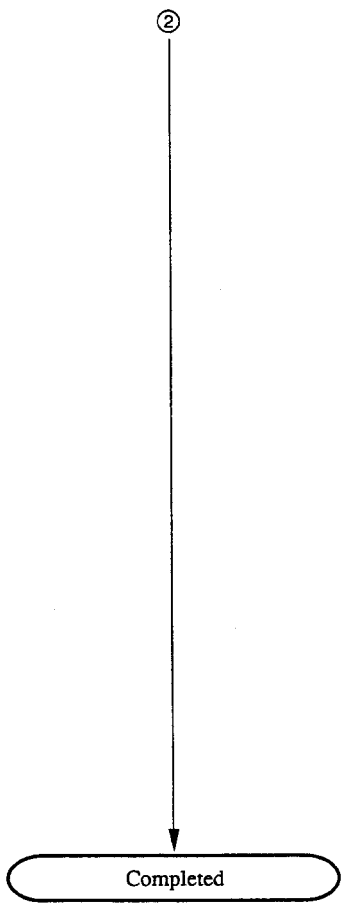
• Check that the voltage (A) is less than 1 V while pressing the (↑) key.

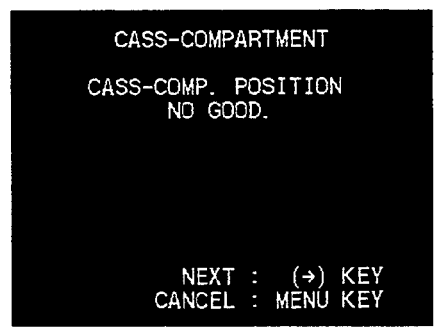
```
      CASS-COMPARTMENT

 • IC153-2/DR
THE VOLTAGE VALUE <A>
IS PERMISSIBLE LIMIT
 WHILE PRESSING (↑)KEY?
       A > 4 V

            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :   (←) KEY
        CANCEL : MENU KEY
```

• IC153/DR-214 (L-2)

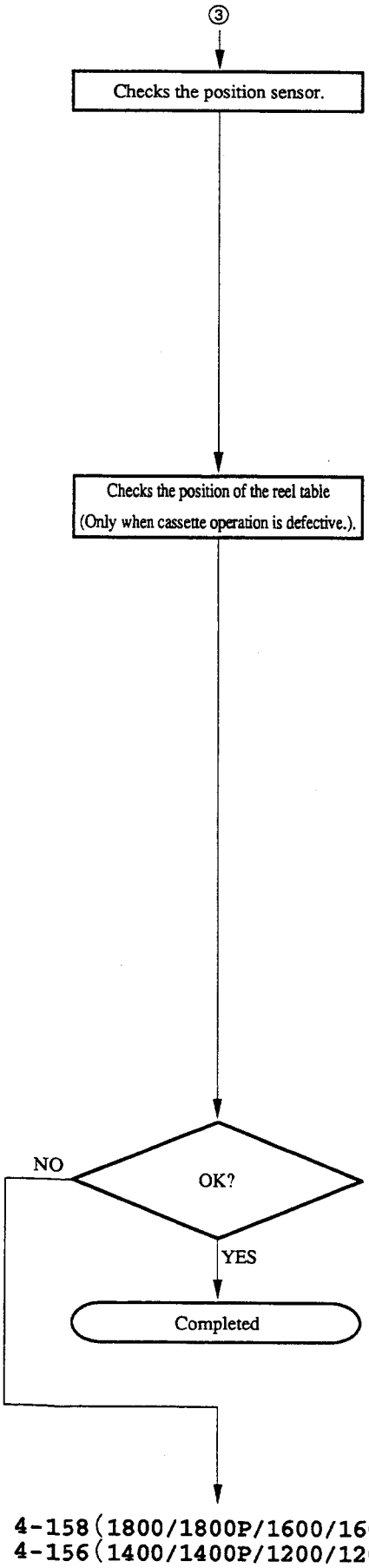
• Check that the voltage (A) is more than 4 V while pressing the (↑) key.







- A cassette compartment position sensor does not operate correctly.
  Check harnesses. When the harnesses are not defective, replace a cassette compartment to a new one.



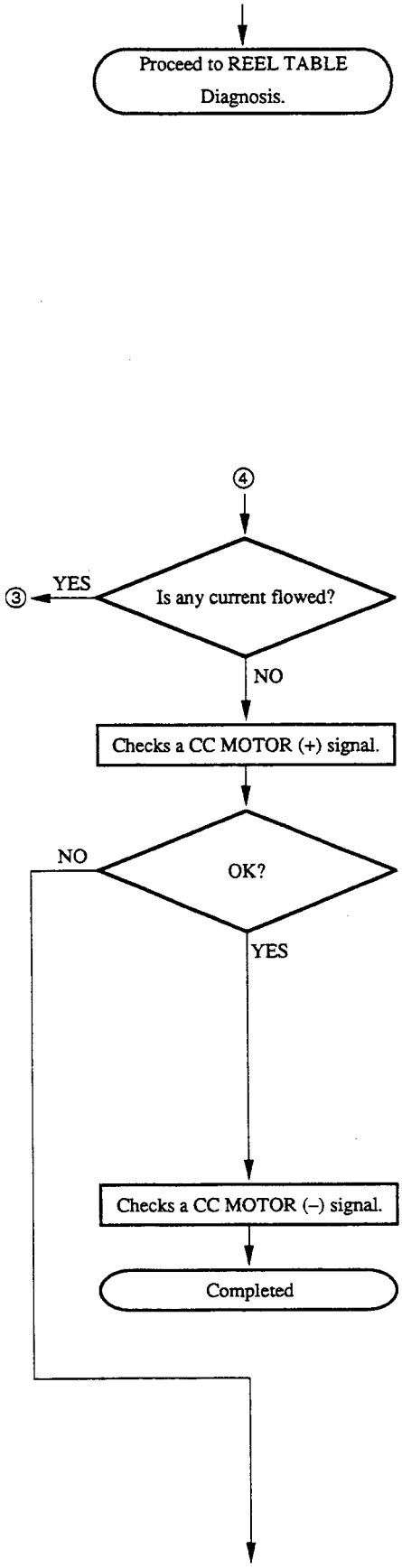

```
CASS-COMPARTMENT

PRESS (↑)/(↓)KEYS AND
CHECK THE COMPARTMENT
POSITION SENSOR.
      HORIZON
         UP :  (↑) KEY
       DOWN :  (↓) KEY
         NG :   NO KEY
         OK :  YES KEY
   PREVIOUS :  (←) KEY
     CANCEL : MENU KEY
```

- Check that the information display of the position sensors is changed by moving the cassette compartment with pressing the (↑) or (↓) key.

```
CASS-COMPARTMENT

IS THE REEL TABLES
IN THE S-POSITION?



         NO :   NO KEY
        YES :  YES KEY
   PREVIOUS :  (←) KEY
     CANCEL : MENU KEY
```

```
CASS-COMPARTMENT

IS THE REEL TABLES
IN THE L-POSITION?



         NO :   NO KEY
        YES :  YES KEY
   PREVIOUS :  (←) KEY
     CANCEL : MENU KEY
```

4-158(1800/1800P/1600/1600P)
4-156(1400/1400P/1200/1200P)

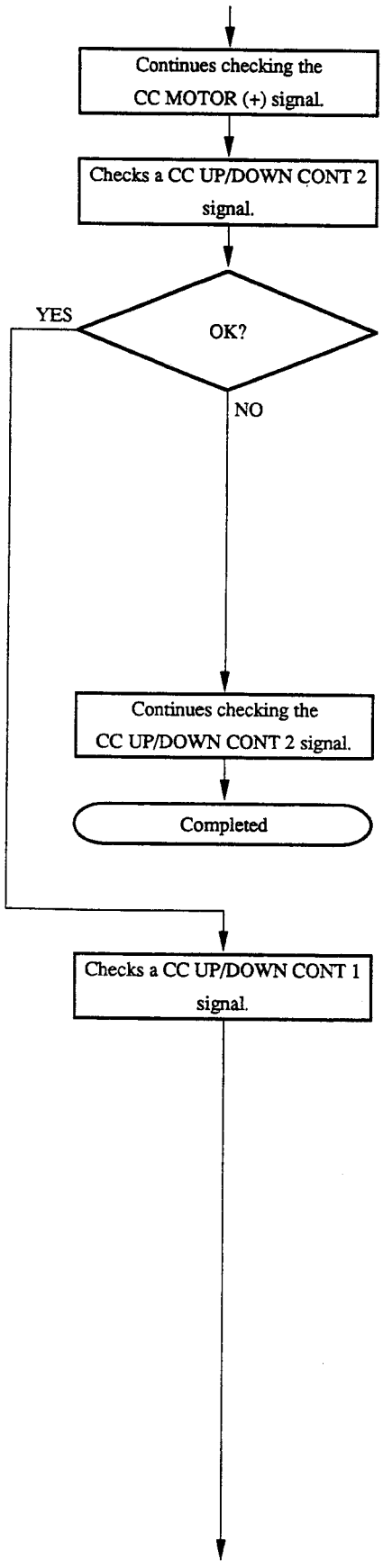



```
CASS-COMPARTMENT

AN ERROR HAS BEEN
DETECTED DURING DIAG.
EXECUTE DIAGNOSTICS?



NO :   NO KEY
YES :  YES KEY
```

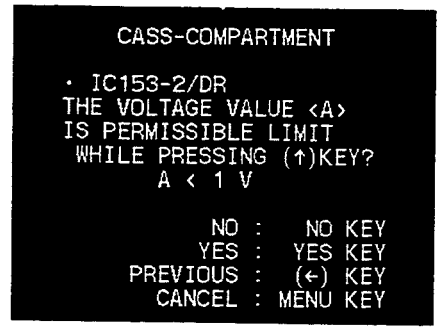
```
CASS-COMPARTMENT

• CN930-12/CASS-COMP
THE VOLTAGE VALUE <A>
IS PERMISSIBLE LIMIT
 WHILE PRESSING (↑)KEY?
      A > 10 V

          NO :   NO KEY
         YES :  YES KEY
    PREVIOUS :  (←) KEY
      CANCEL : MENU KEY
```

- Check that the voltage (A) is more than 10 V while pressing the (↑) key.

Continues to the next page.

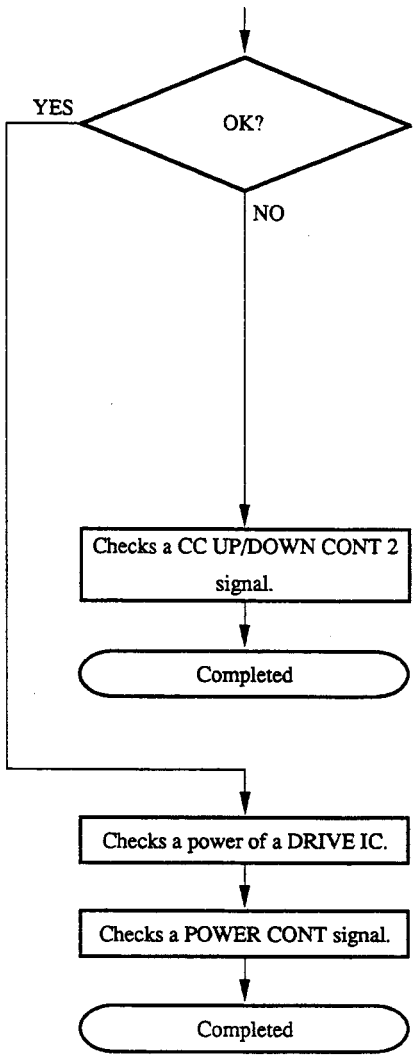

Continues checking the CC MOTOR (+) signal.
Checks a CC UP/DOWN CONT 2 signal.
YES
OK?
NO
Continues checking the CC UP/DOWN CONT 2 signal.
Completed
Checks a CC UP/DOWN CONT 1 signal.

4-160 (1800/1800P/1600/1600P)
4-158 (1400/1400P/1200/1200P)



• IC153/DR-214 (L-2)

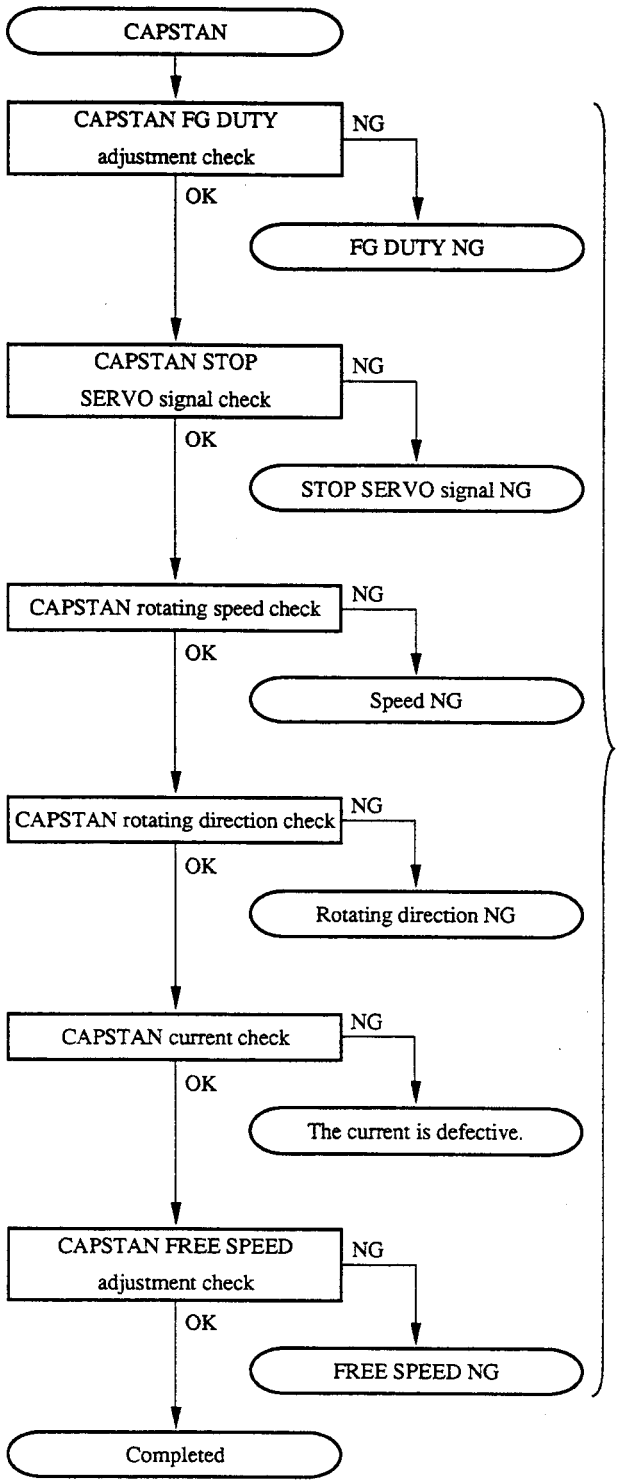
• Checks that the voltage (A) is less than 1 V while pressing the (↑) key.

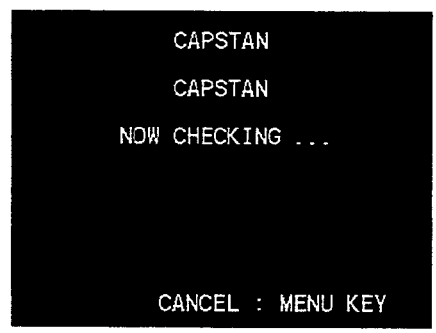



```
      CASS-COMPARTMENT

 • IC153-1/DR
THE VOLTAGE VALUE <A>
IS PERMISSIBLE LIMIT
 WHILE PRESSING (↑)KEY?
       A > 4 V

            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

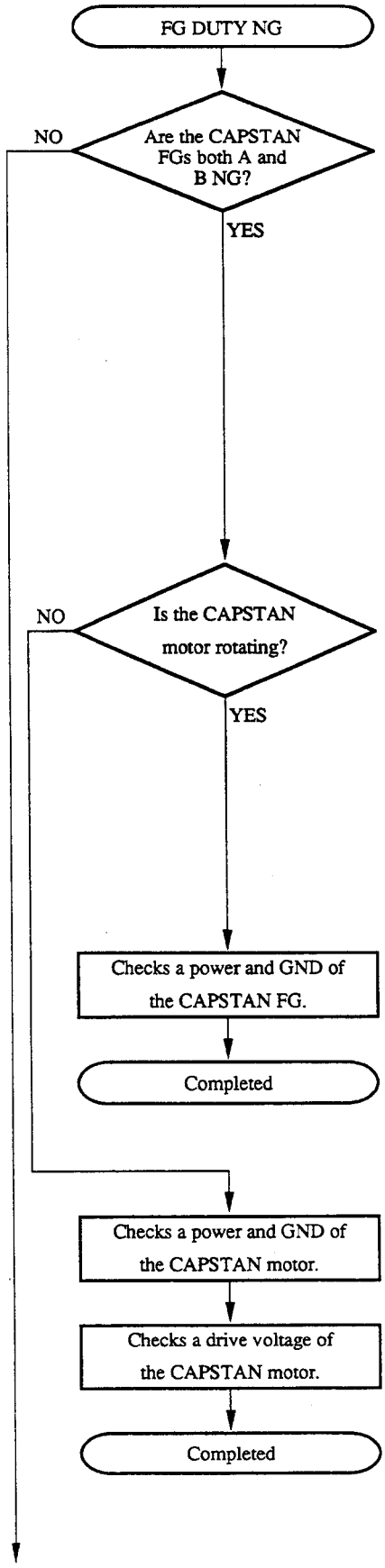
- IC153/DR-214 (L-2)
- Checks that the voltage (A) is more than 4 V while pressing the (↑) key.

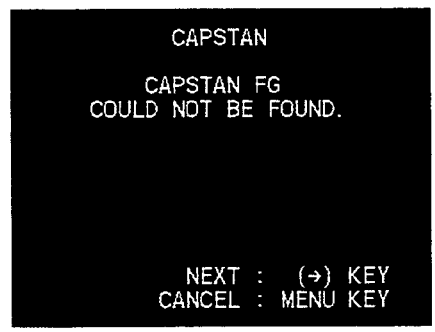
(11) CAPSTAN Diagnosis

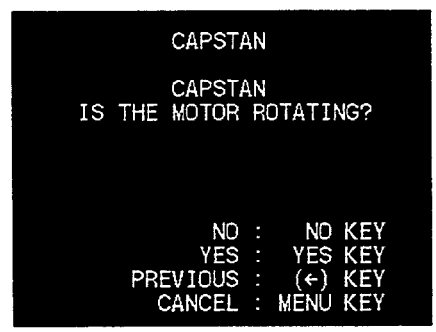




- The unit checks automatically.

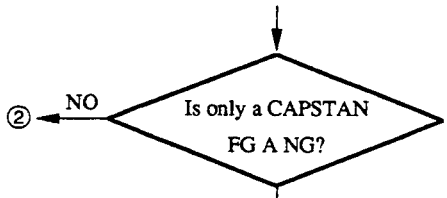

FG DUTY NG
Are the CAPSTAN FGs both A and B NG?
NO
YES
Is the CAPSTAN motor rotating?
NO
YES
Checks a power and GND of the CAPSTAN FG.
Completed
Checks a power and GND of the CAPSTAN motor.
Checks a drive voltage of the CAPSTAN motor.
Completed

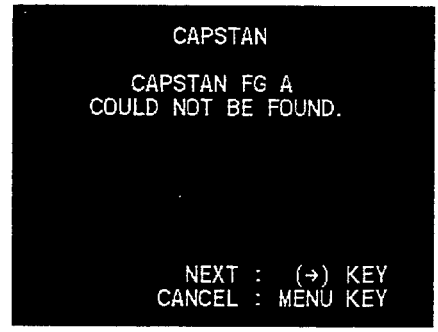




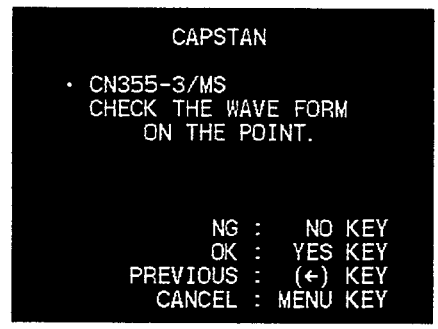
- Check that the capstan motor is rotating or not.

Continues to the next page.

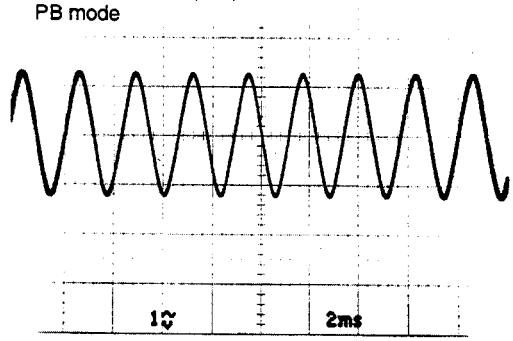




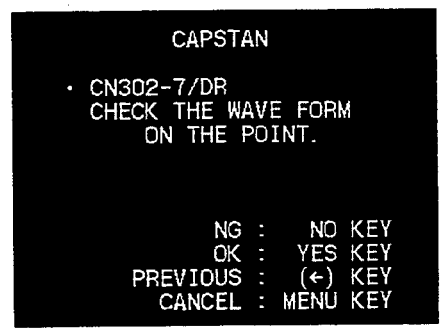
Checks the CAPSTAN FG A signal.



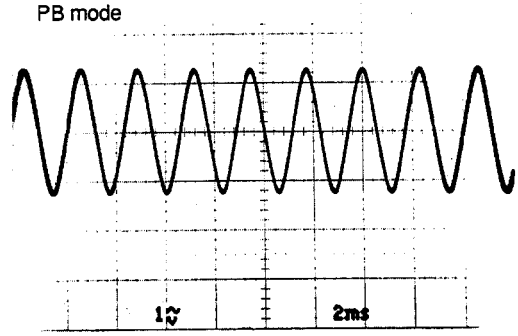
• CN355-3/MS-39 (D-3) waveform
PB mode

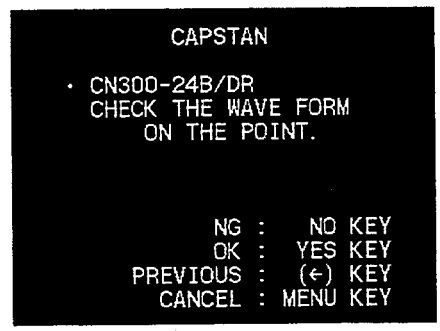


4-164 (1800/1800P/1600/1600P)
4-162 (1400/1400P/1200/1200P)

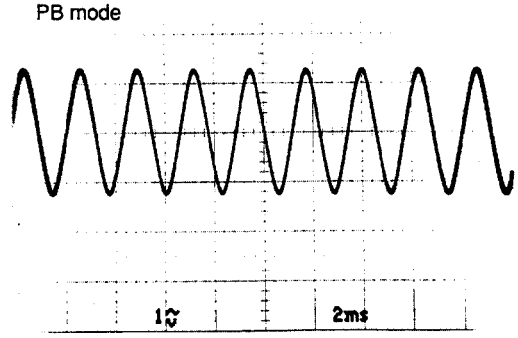


• CN302-7/DR-214 (H-5) waveform
PB mode

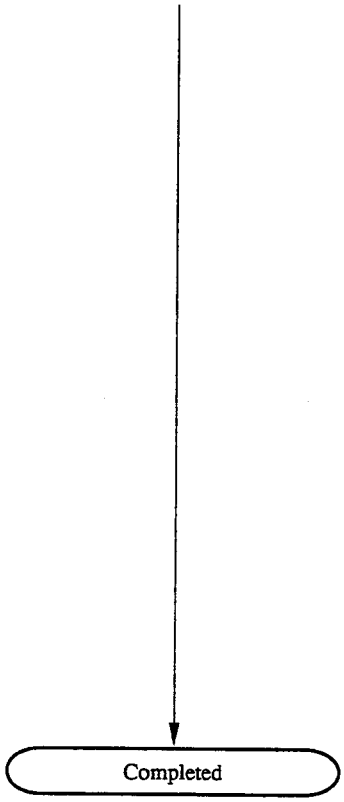


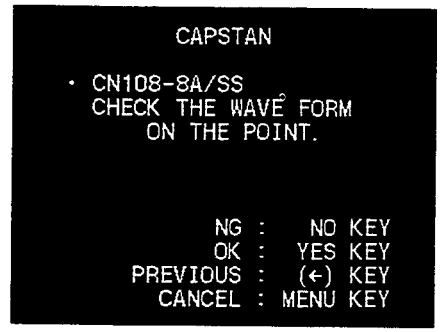


• CN300-24B/DR-214 (H-1) waveform
PB mode

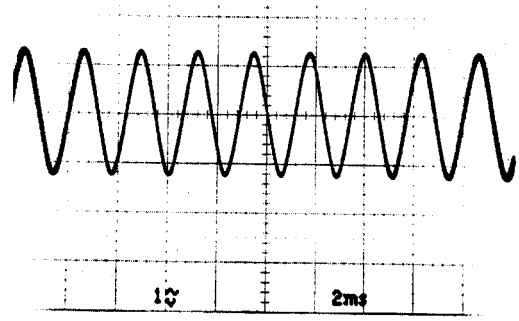


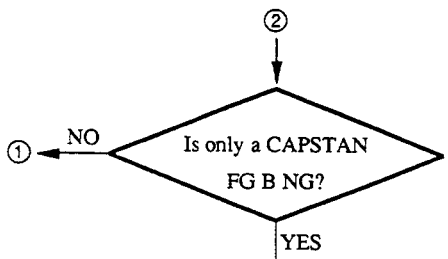
Continues to the next page.





• CN108-8A/SS-53 (K-6) waveform
PB mode





4-166 (1800/1800P/1600/1600P)
4-164 (1400/1400P/1200/1200P)

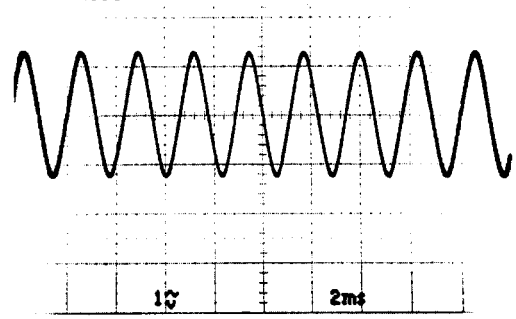
Checks the CAPSTAN FG B signal.

CAPSTAN

• CN355-2/MS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN355-2/MS-39 (D-3) waveform
PB mode

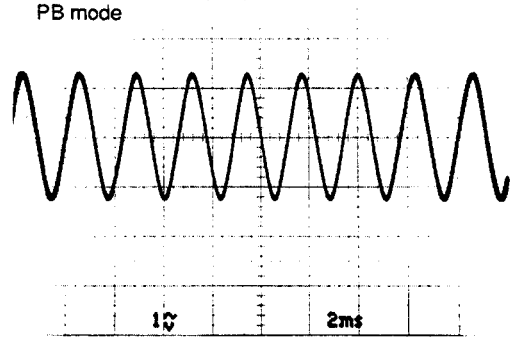


CAPSTAN

• CN302-8/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN302-8/DR-214 (H-5) waveform
PB mode



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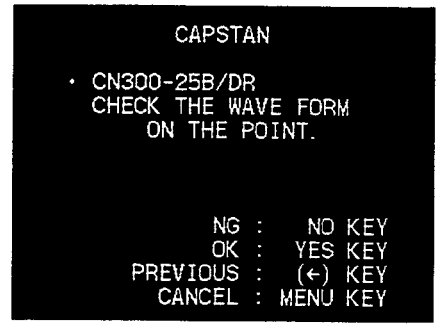
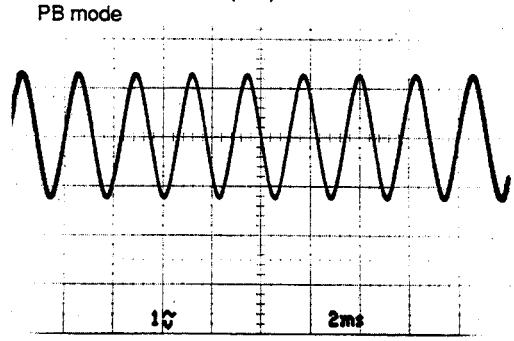
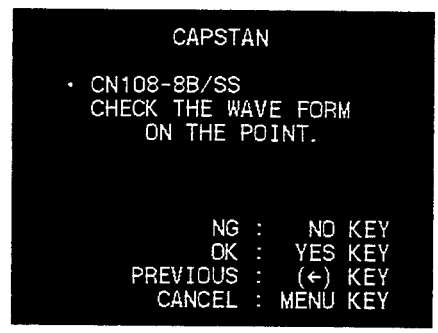
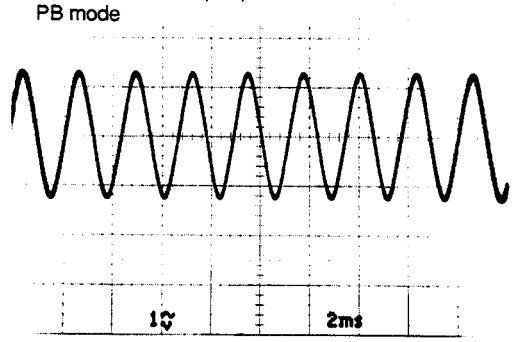


• CN300-25B/DR-214 (H-1) waveform
PB mode

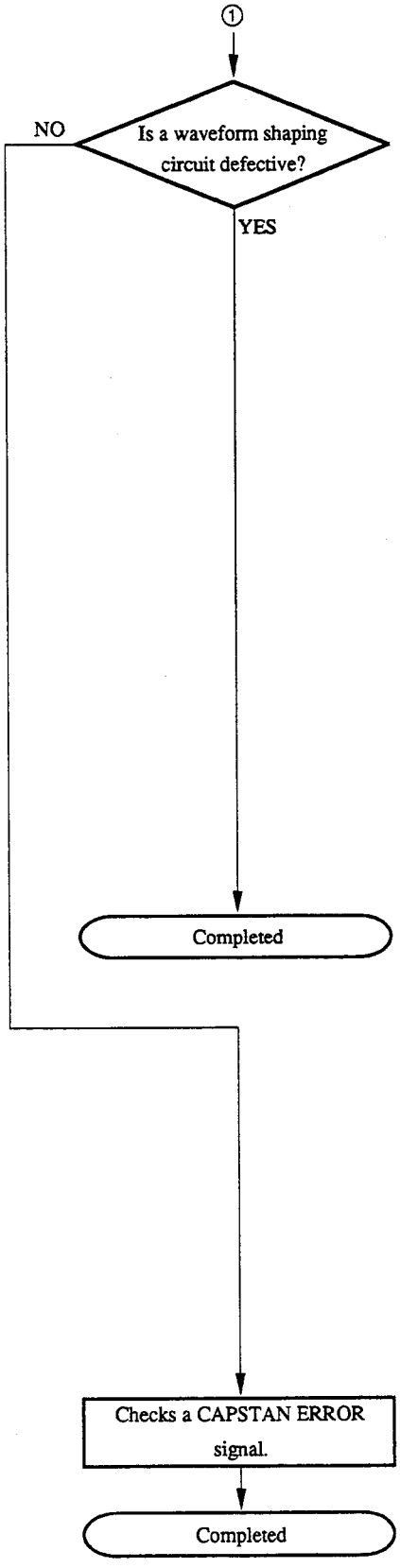




• CN108-8B/SS-53 (K-6) waveform
PB mode



Completed




```
CAPSTAN

CAPSTAN FG SHAPER
NO GOOD.

NEXT :  (→) KEY
CANCEL : MENU KEY
```

```
CAPSTAN

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 SS BOARD
1 ADJUST +5V LINE

NEXT :  (→) KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

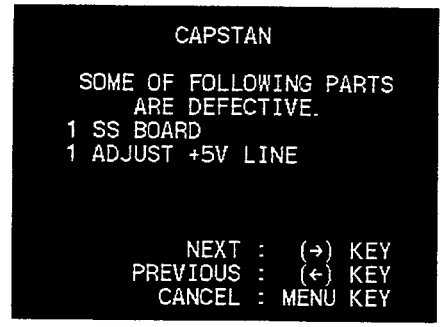
- The probable cause is that a ADJUST +5 V signal is not supplied to the SS board.

```
CAPSTAN

CAPSTAN FG DUTY ADJUST
NO GOOD.

NEXT :  (→) KEY
CANCEL : MENU KEY
```

STOP SERVO signal NG



- The probable cause is that a ADJUST +5 V signal is not supplied to the SS board.

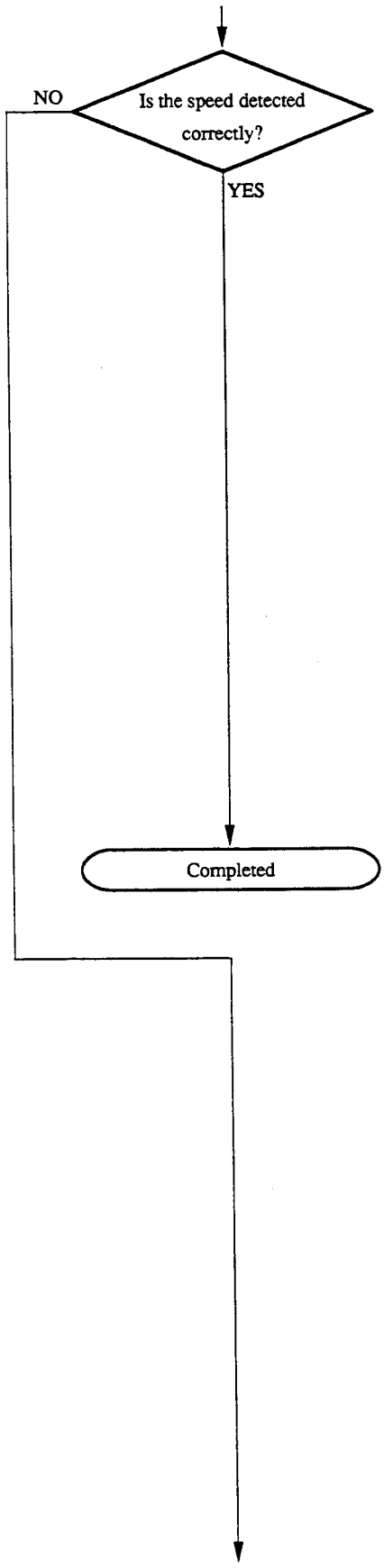
Completed

SPEED NG

Checks a speed detecting circuit of the CAPSTAN.

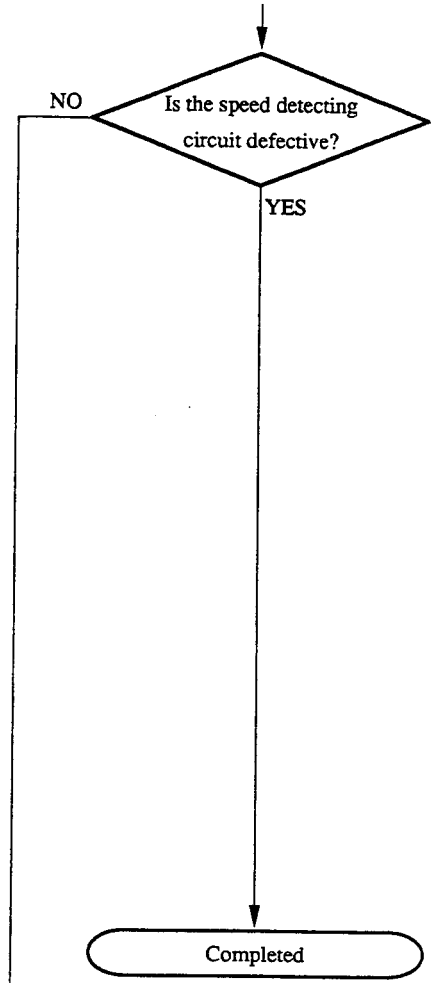
- The unit checks automatically.

4-170 (1800/1800P/1600/1600P)
4-168 (1400/1400P/1200/1200P)



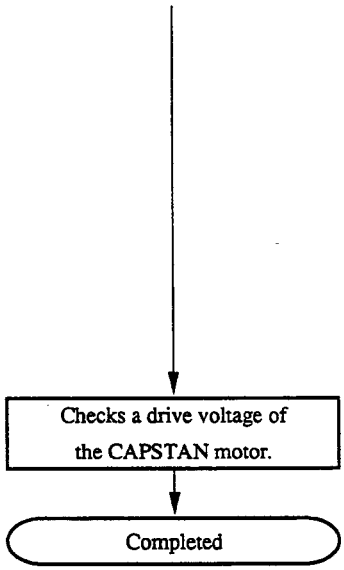
- Check that the connections of harnesses and so on are faulty or not.

Continues to the next page.

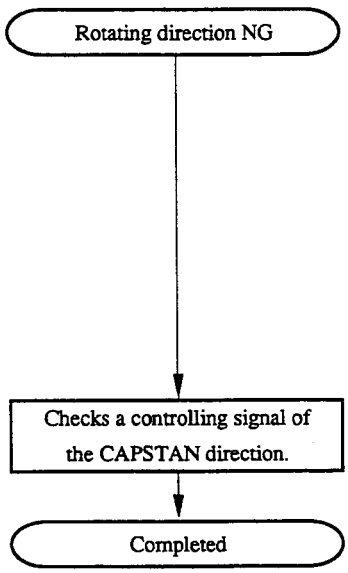


- The probable cause is that the capstan 2FG circuit on the SS board is defective.

4-172 (1800/1800P/1600/1600P)
4-170 (1400/1400P/1200/1200P)


Checks a drive voltage of
the CAPSTAN motor.
Completed

CAPSTAN
CAPSTAN SPEED
NO GOOD.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


Rotating direction NG
Checks a controlling signal of
the CAPSTAN direction.
Completed

CAPSTAN
CAPSTAN DIRECTION
NO GOOD.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

Current NG

- The probable cause is that the capstan current detecting circuit is defective or an extraordinary current is flowing through the capstan motor.

Completed

FREE SPEED NG

4-174 (1800/1800P/1600/1600P)
4-172 (1400/1400P/1200/1200P)

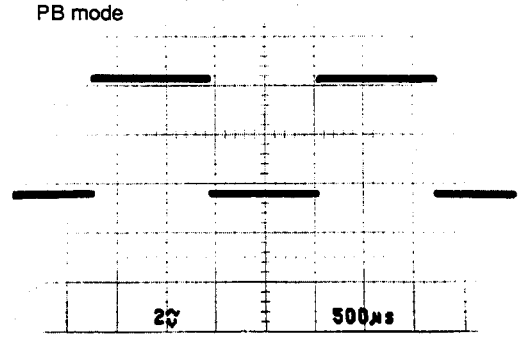
Checks a CAPSTAN
FG A NORM. signal.

CAPSTAN

· IC219-7/SS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• IC219-7/SS-53 (H-1) waveform
PB mode

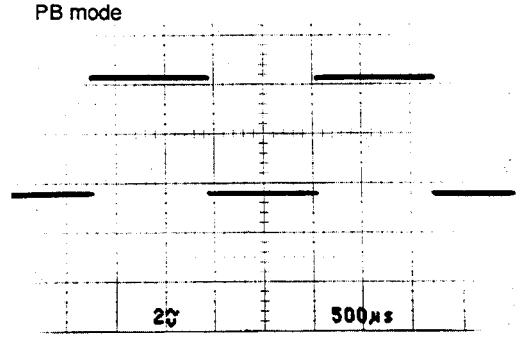


CAPSTAN

· CN300-27B/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN300-27B/DR-214 (H-1) waveform
PB mode



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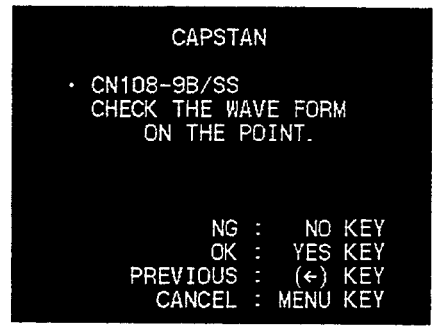
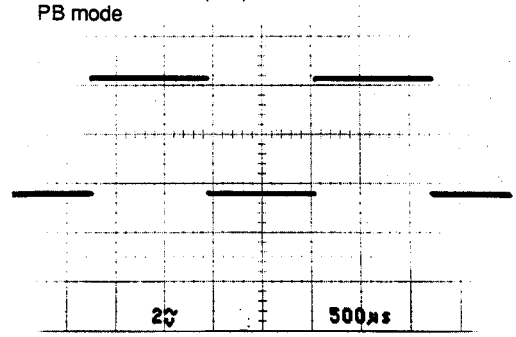
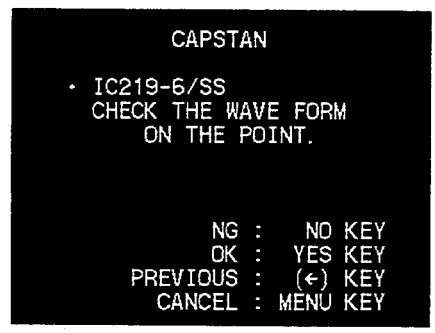
Checks a CAPSTAN
FG B NORM. signal.

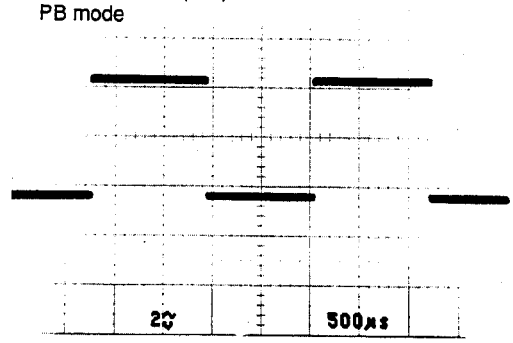


• CN108-9B/SS-53 (K-6) waveform
PB mode

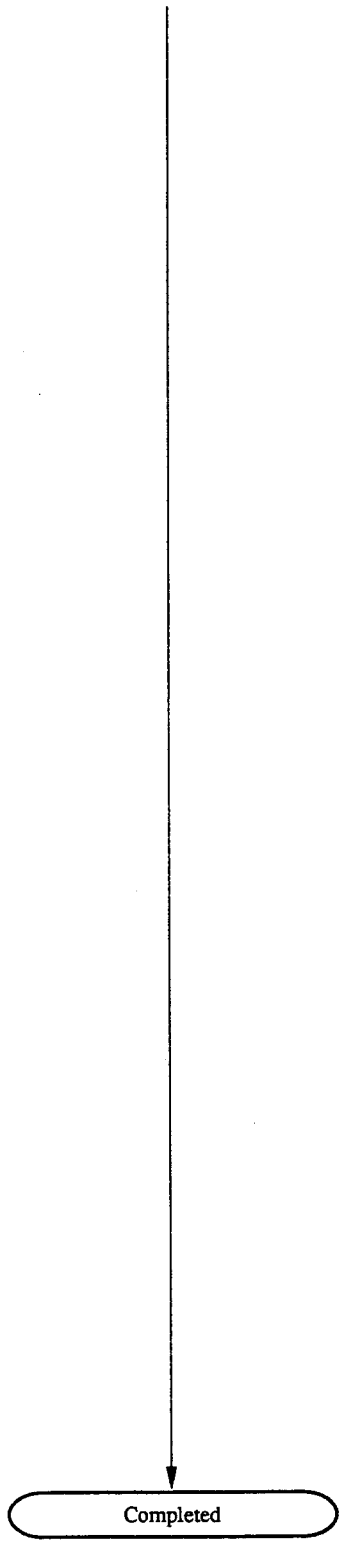


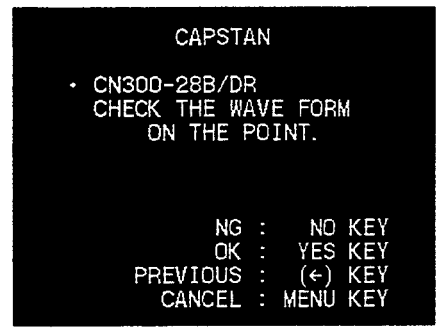


• IC219-6/SS-53 (H-1) waveform
PB mode

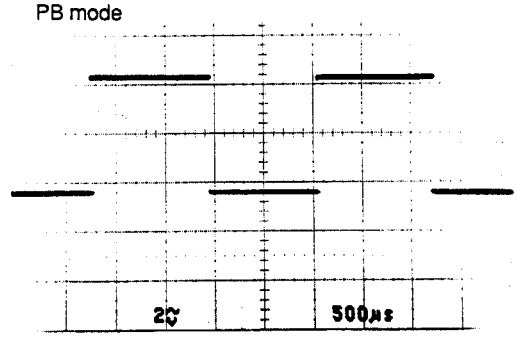


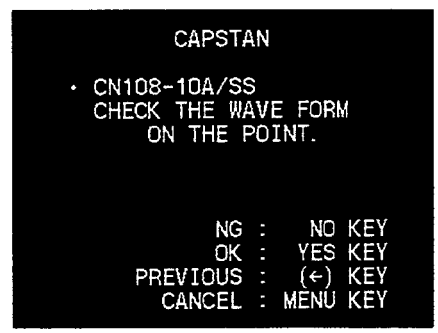
4-176 (1800/1800P/1600/1600P)
4-174 (1400/1400P/1200/1200P)



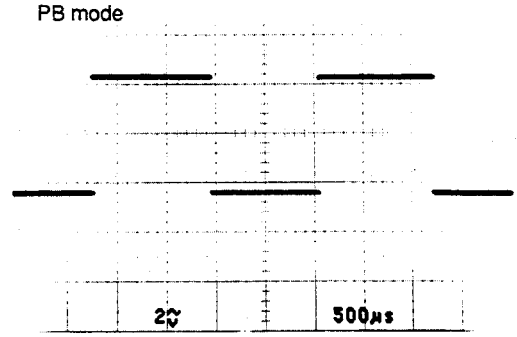


• CN300-28B/DR-214 (H-1) waveform
PB mode

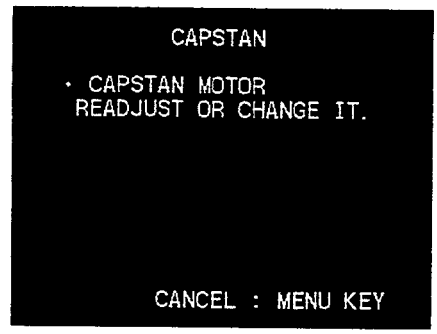




• CN108-10A/SS-53 (K-6) waveform
PB mode



When detecting any error on an adjusting data.

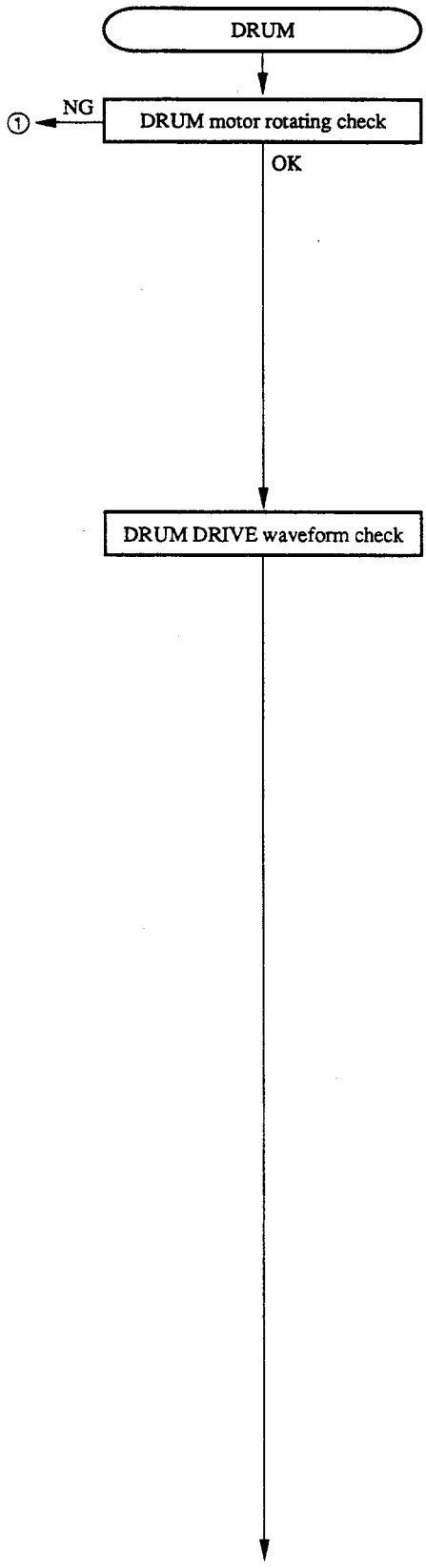


Completed

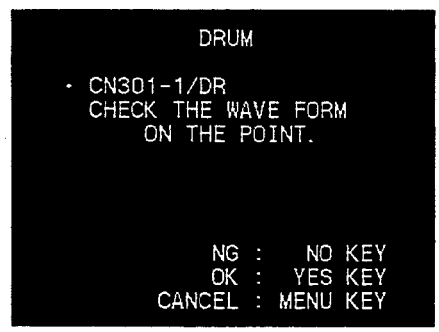
When detecting any error on a speed deviation.

Completed

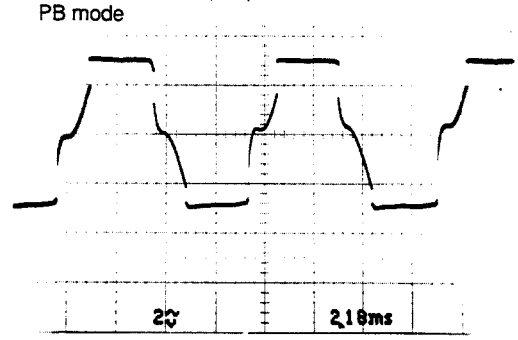
(12) DRUM Diagnosis



• The unit checks automatically.



• CN301-1/DR-214 (C-5) waveform
PB mode



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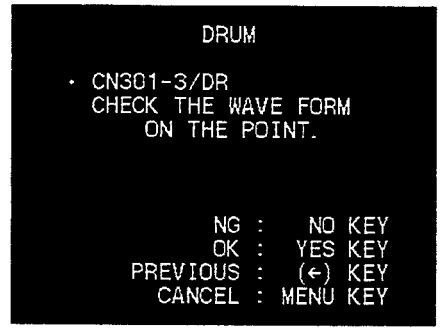
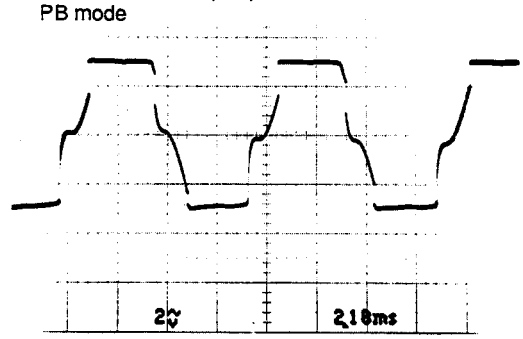
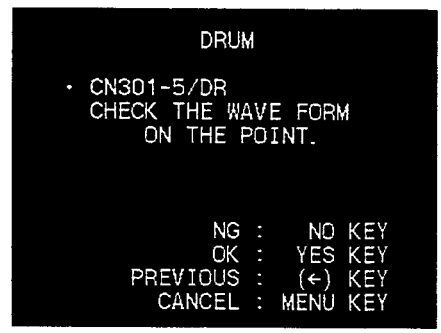
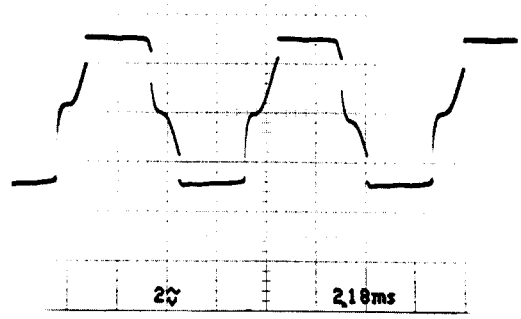


• CN301-3/DR-214 (C-5) waveform
PB mode

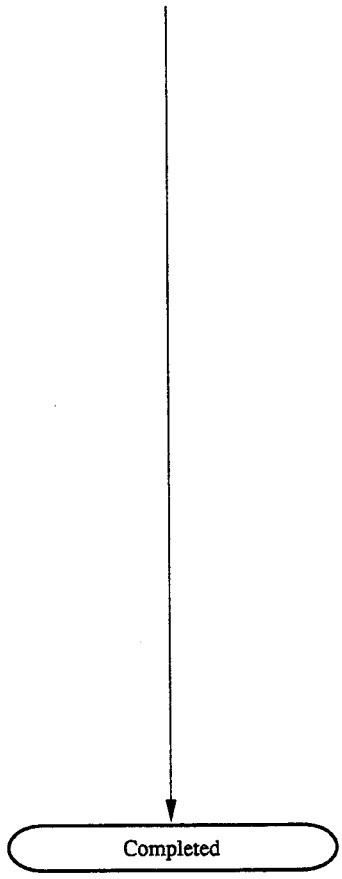


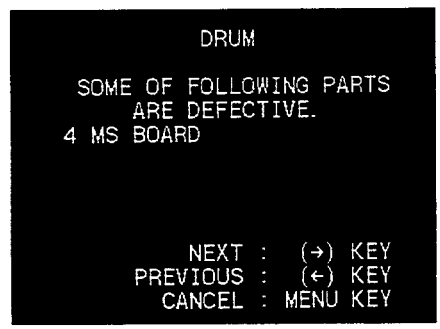


• CN301-5/DR-214 (C-5) waveform
PB mode

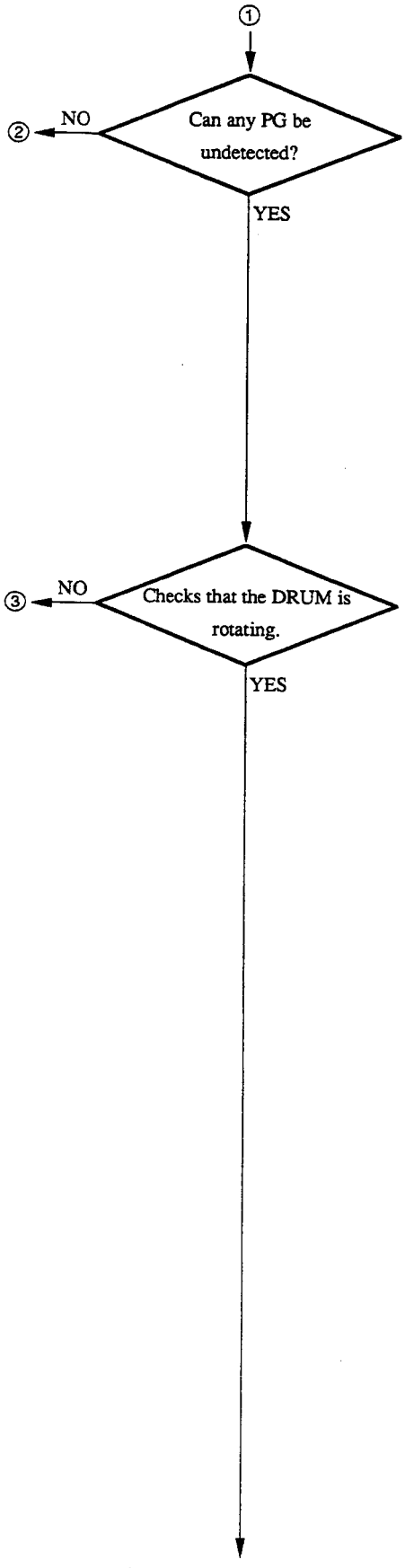


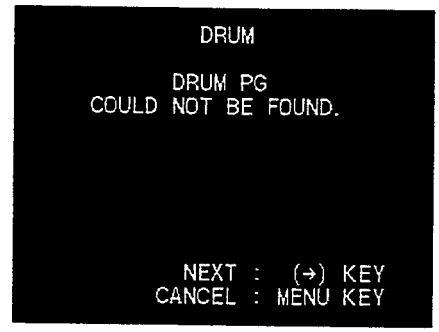
4-180 (1800/1800P/1600/1600P)
4-178 (1400/1400P/1200/1200P)

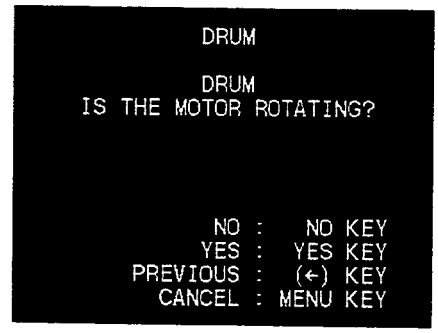




- A drum might rotate unless the drum drive waveform is not normal. The drum might not rotate depending on the position after starting the drum.
  Check the connection between the drum and the DR board.



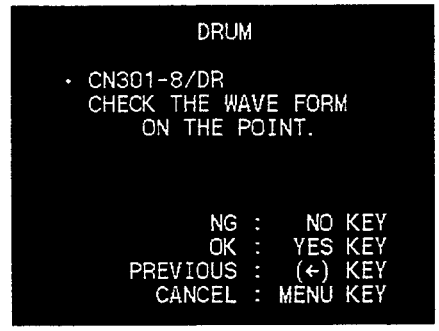




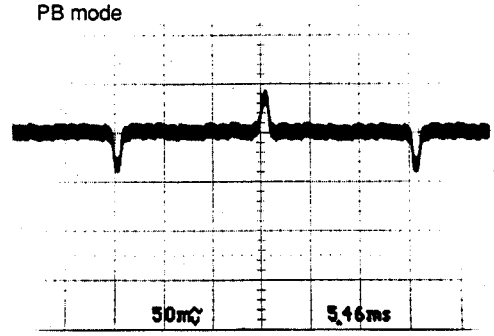
- Check that the DRUM motor is rotating or not.

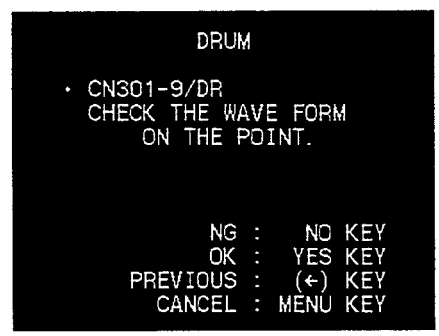
4-182 (1800/1800P/1600/1600P)
4-180 (1400/1400P/1200/1200P)

Checks a PG input signal.

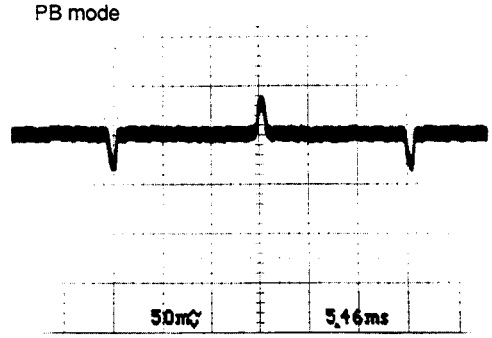


• CN301-8/DR-214 (C-5) waveform
PB mode





• CN301-9/DR-214 (C-5) waveform
PB mode



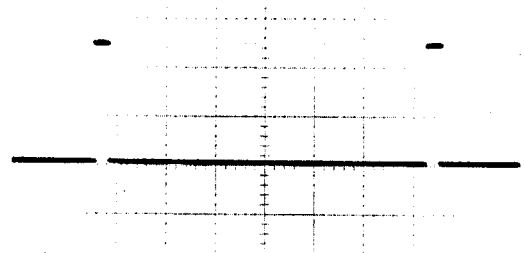
Continues to the next page.

Checks a DRUM PG PULSE signal.

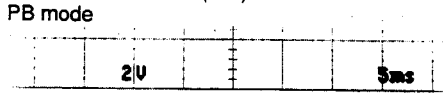
DRUM

• CN300-19B/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



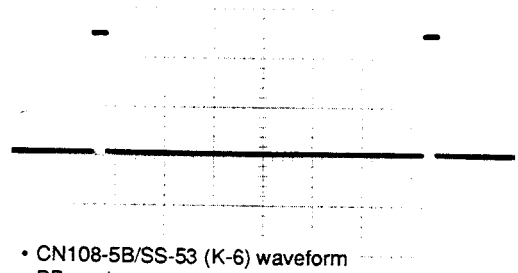
• CN300-19B/DR-214 (H-1) waveform
PB mode



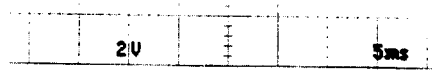
DRUM

• CN108-5B/SS
CHECK THE WAVE FORM
ON THE POINT.

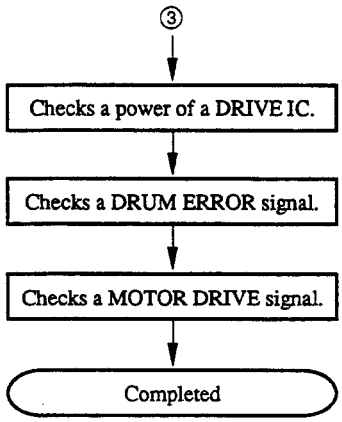
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

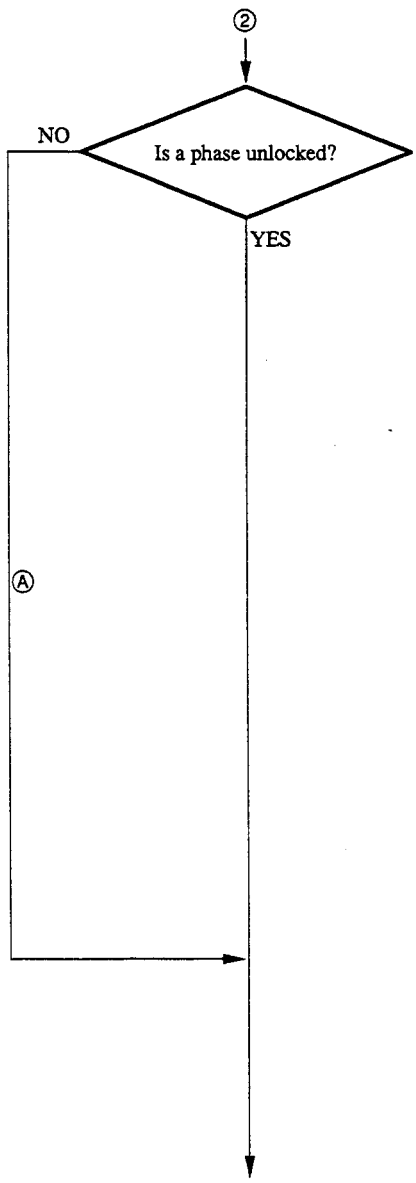


• CN108-5B/SS-53 (K-6) waveform
PB mode

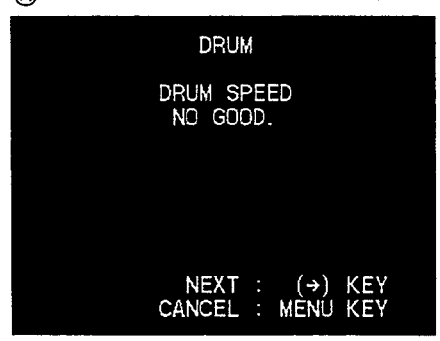


Completed





Ⓐ



Continues to the next page.

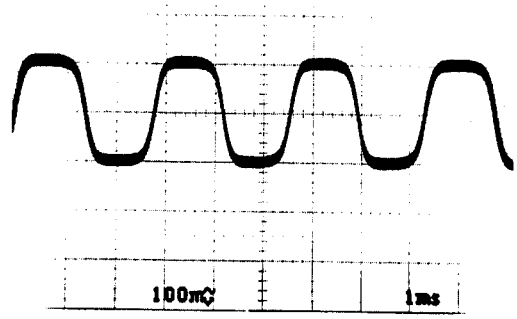
Checks a FG input signal.

DRUM

• CN301-12/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN301-12/DR-214 (C-5) waveform
PB mode

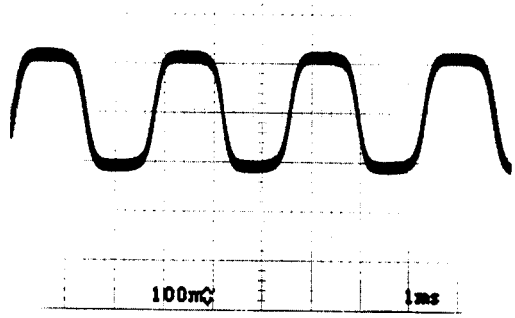


DRUM

• CN301-14/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• CN301-14/DR-214 (C-5) waveform
PB mode



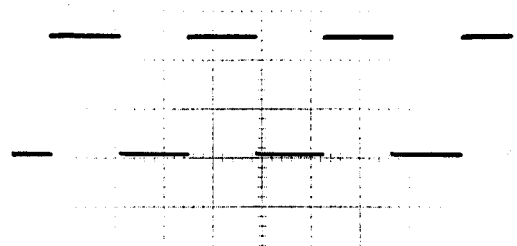
4-186 (1800/1800P/1600/1600P)
4-184 (1400/1400P/1200/1200P)

Checks a DRUM
FG PULSE signal.

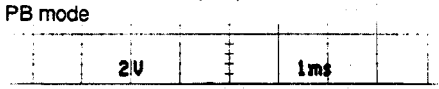
DRUM

• CN300-18B/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



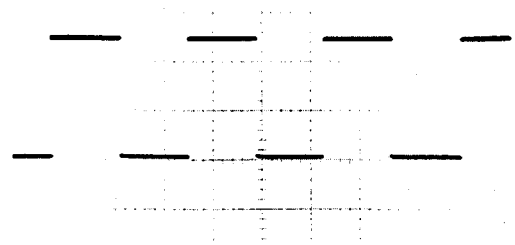
• CN300-18B/DR-214 (H-1) waveform
PB mode



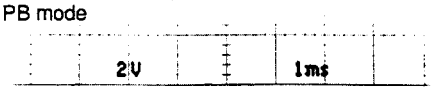
DRUM

• CN108-5A/SS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



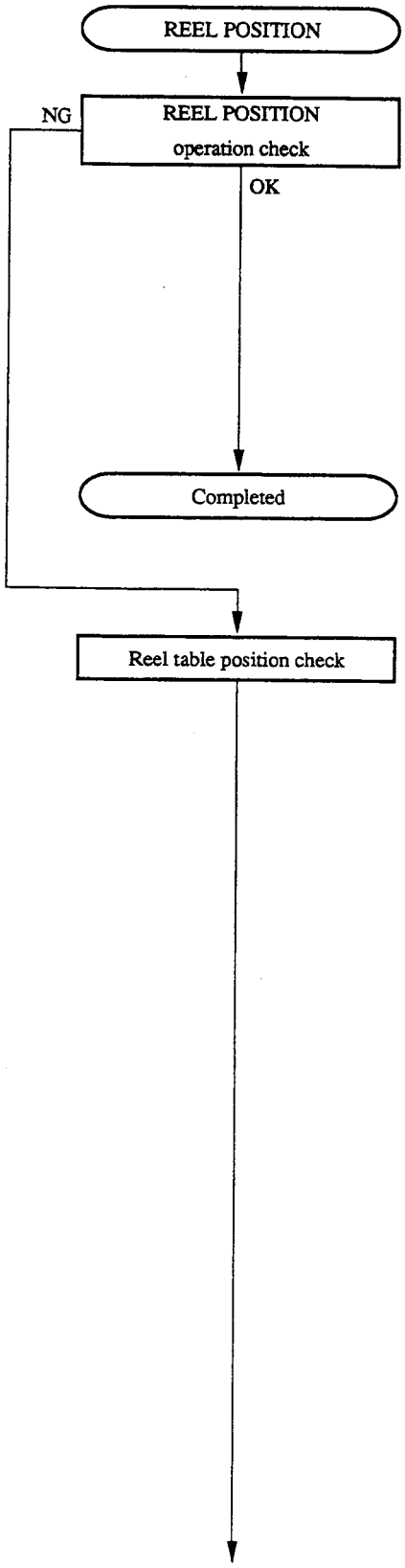
• CN108-5A/SS-53 (K-6) waveform
PB mode

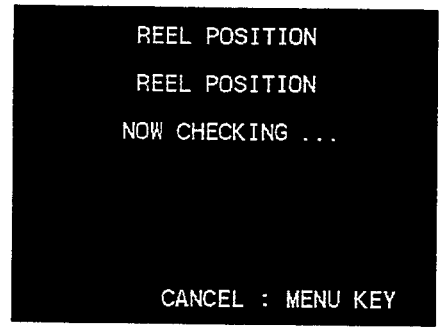


Checks a DRUM ERROR signal.

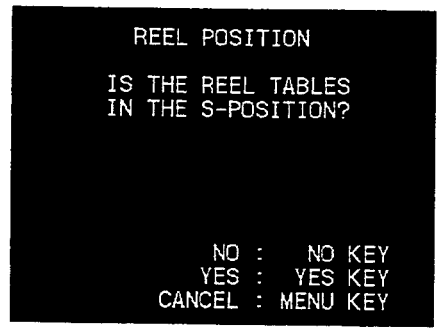
Completed

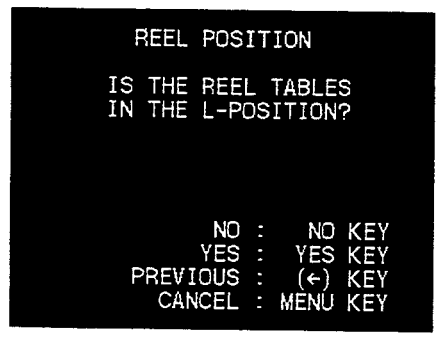
(13) REEL POSITION Diagnosis





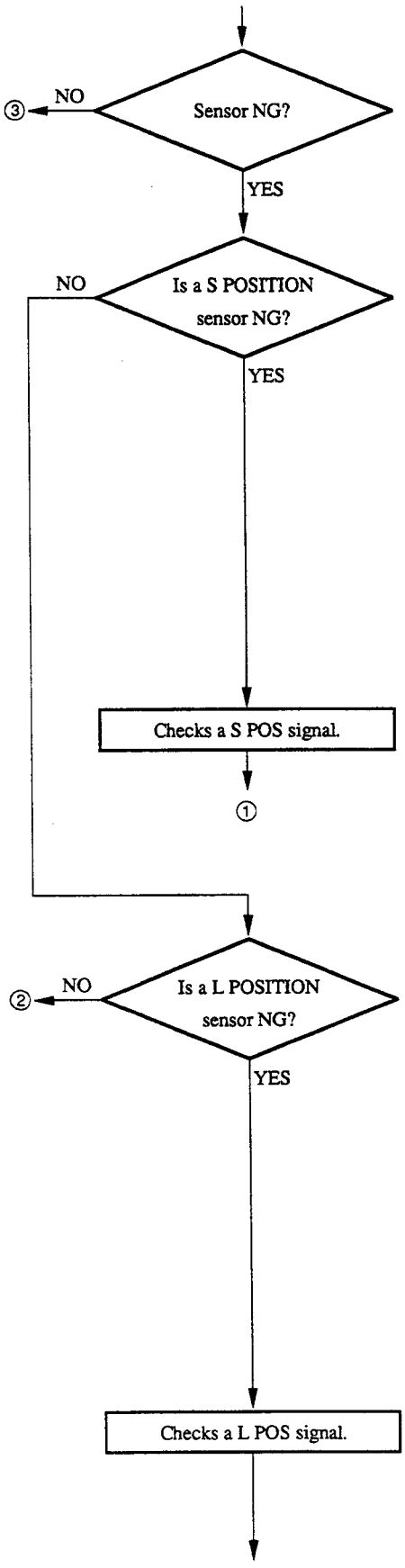
- The unit checks automatically.



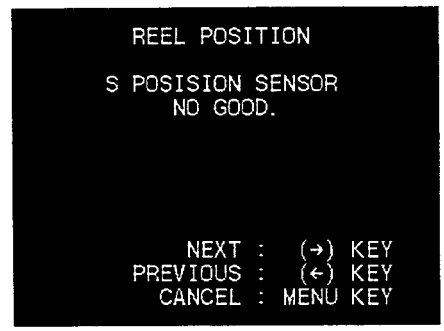


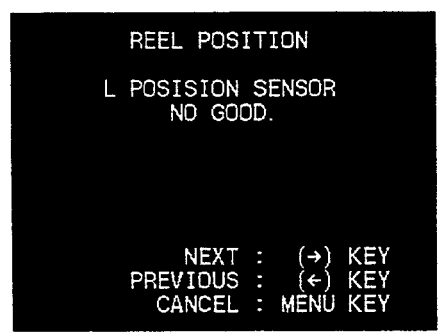
- Check the position of the reel table.

4-188(1800/1800P/1600/1600P)
4-186(1400/1400P/1200/1200P)

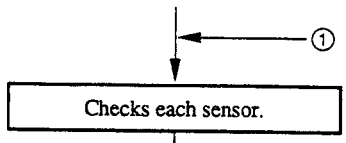


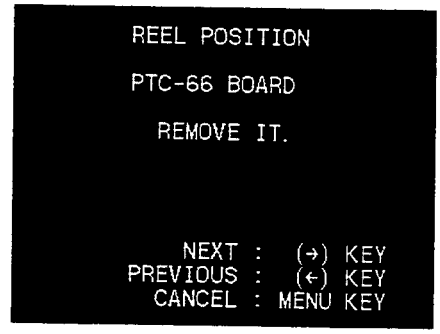
- From the condition of sensors and the result of the Reel Table Position Check, the unit decides that the sensors are NG or not.



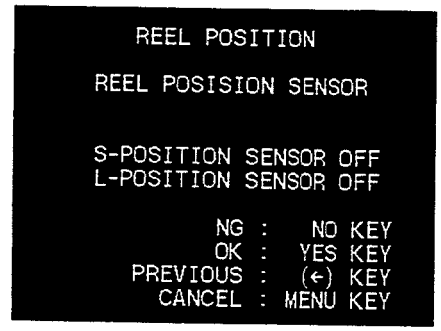


Continues to the next page.

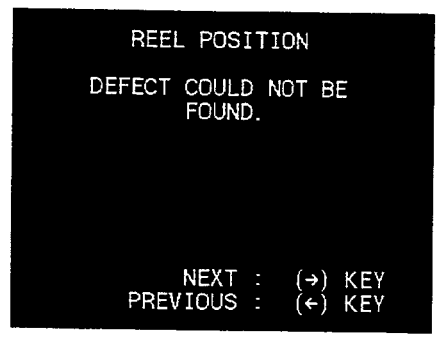




- Stop the diagnosis and turn off the power. Remove the PTC-66 board from the unit.
  Then, turn on the power while harnesses are connected.

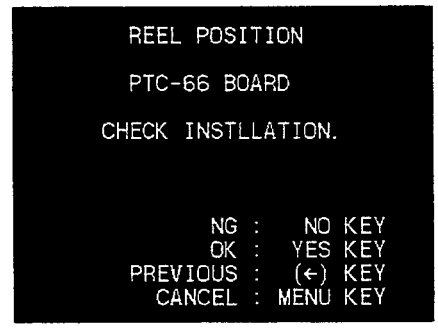


- Check that the display shows OFF.
  Then, check that the display shows ON when the sensor is obstructed by something to cut off a beam of light such as a sheet of black paper.

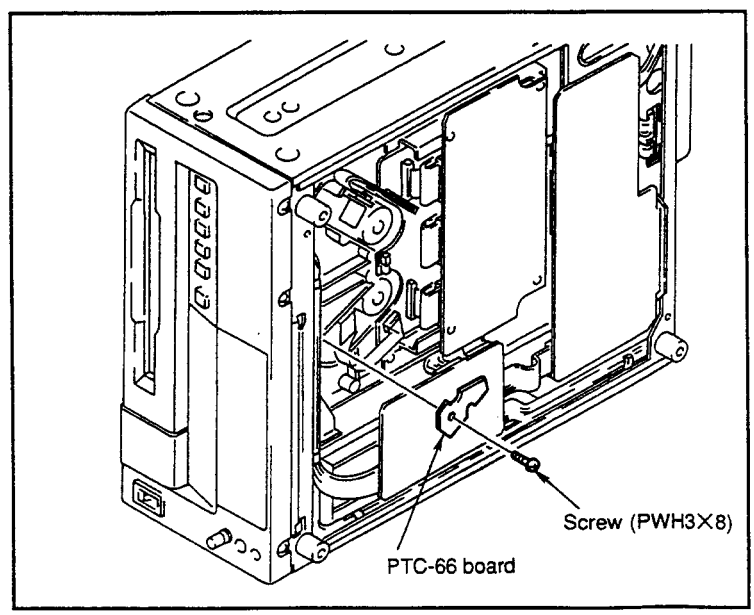


- The probable cause is the faulty connections of harnesses and so on.

- Stop the diagnosis and turn off the power. Then, install the removed PTC-66 board.

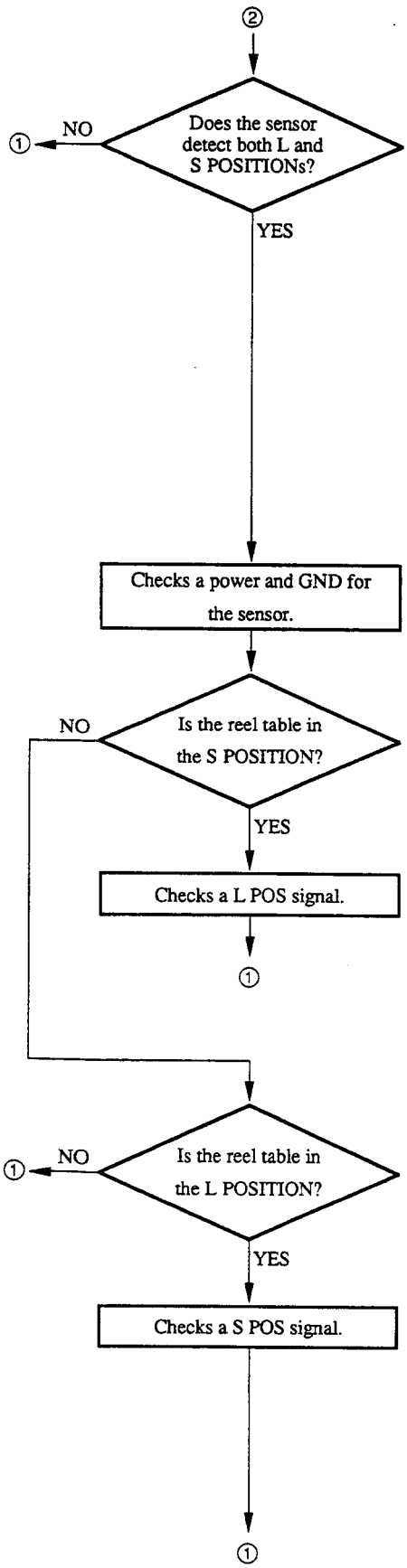


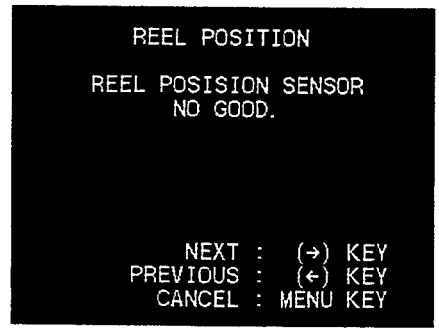
- Install the PTC-66 board.

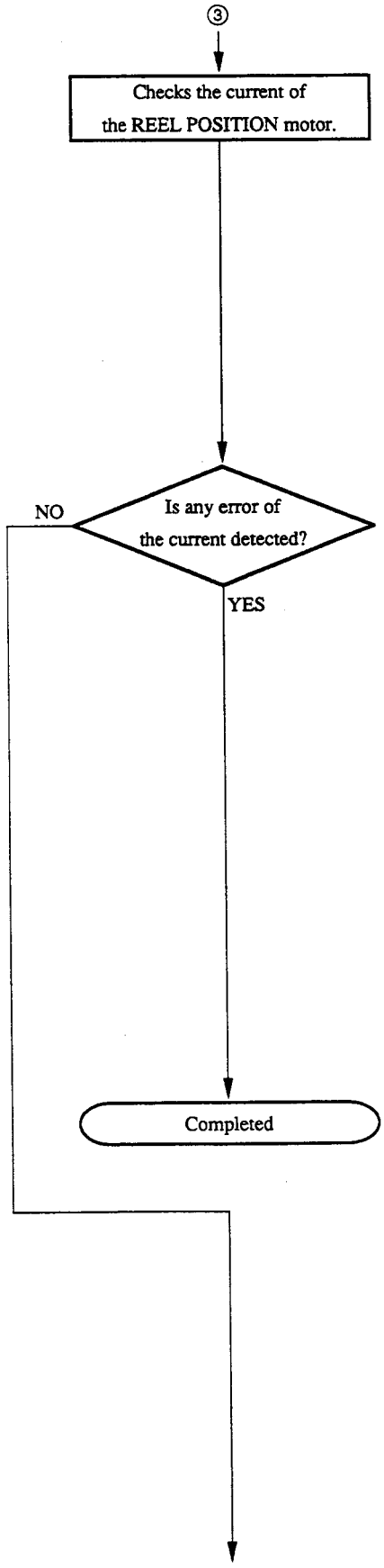


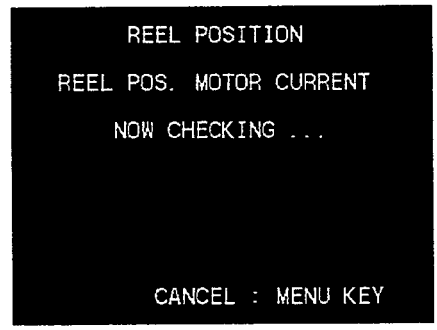
Check : The screw with fixing the board should be tightened.
There should not be clearance between the PTC-66 board and the mechanical parts.

Completed

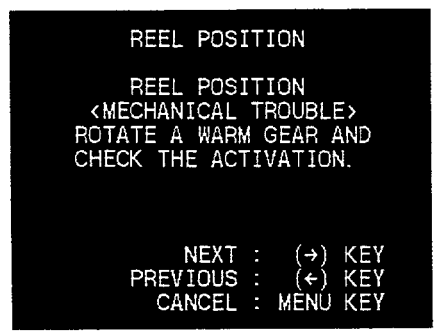

②
Does the sensor detect both L and S POSITIONs?
NO
①
YES
Checks a power and GND for the sensor.
Is the reel table in the S POSITION?
NO
YES
Checks a L POS signal.
①
Is the reel table in the L POSITION?
NO
①
YES
Checks a S POS signal.
①


REEL POSITION
REEL POSISION SENSOR
NO GOOD.
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

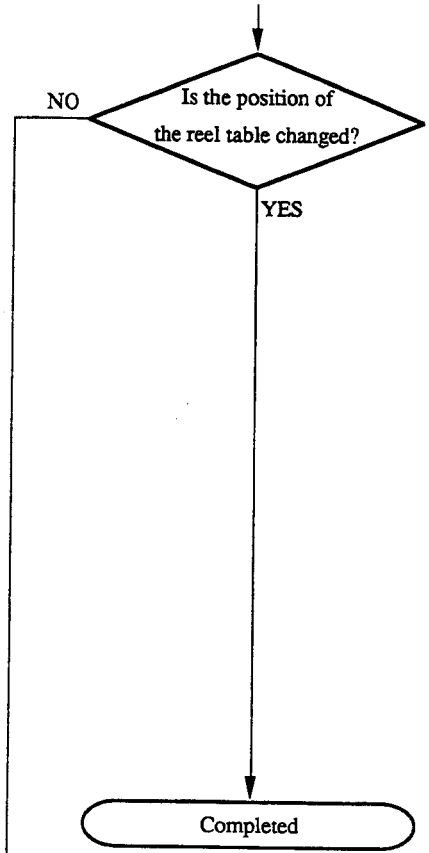




- The unit checks automatically.



Continues to the next page.

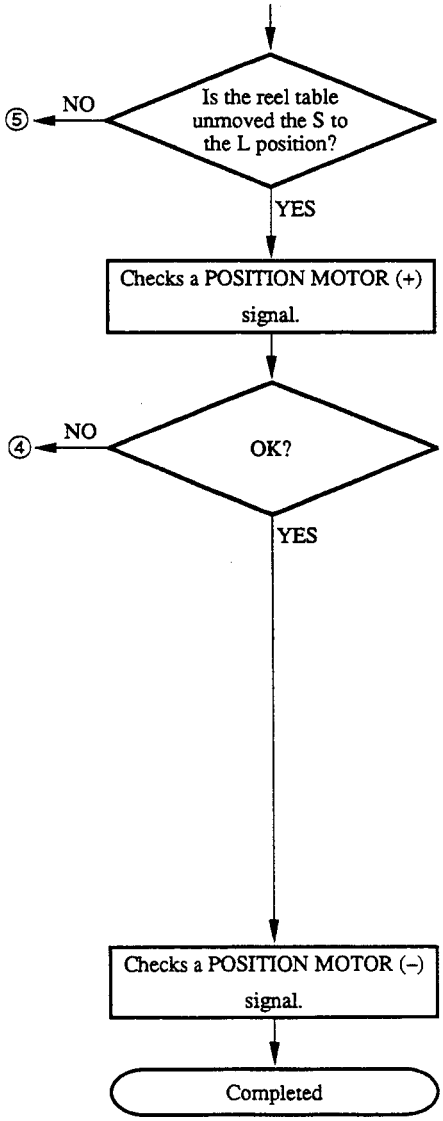



```
REEL POSITION

REEL TABLES POSITION
WAS CHANGED.




NEXT :  (→) KEY
CANCEL : MENU KEY
```

```
REEL POSITION

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 HARNESS(PTC-66~MS)
1 REEL POSITION MOTOR
2 MS BOARD


NEXT :  (→) KEY
PREVIOUS :  (←) KEY
CANCEL : MENU KEY
```

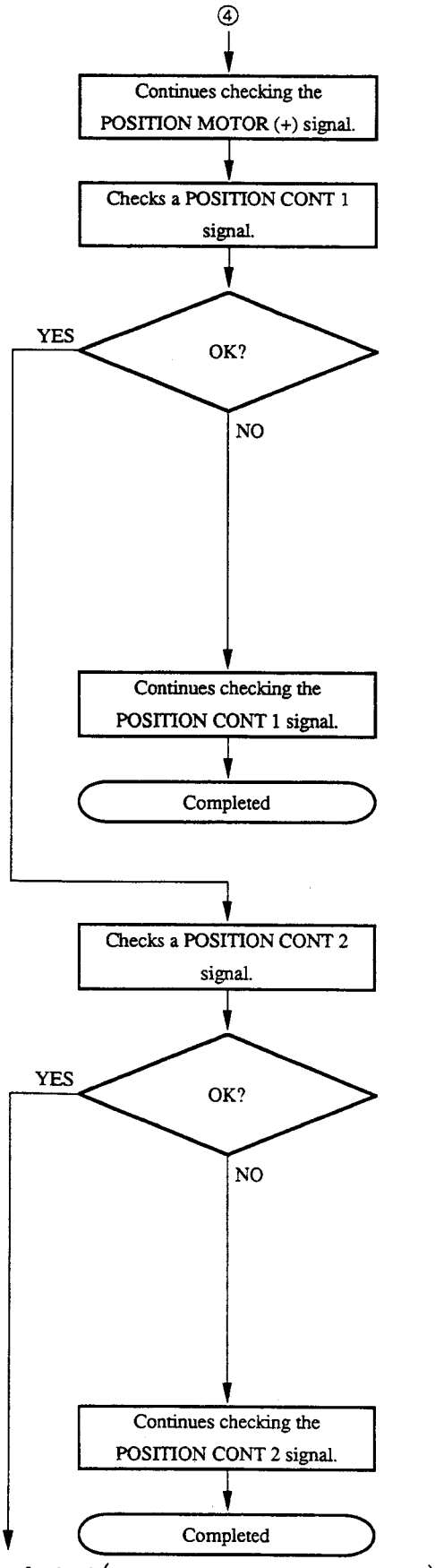
- The probable cause is the faulty connections of harnesses and so on.

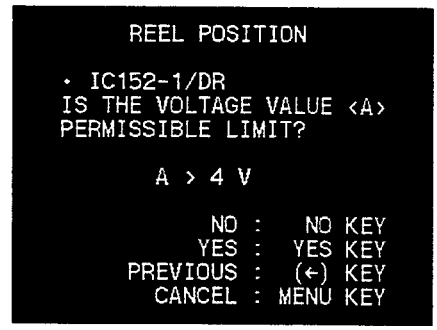
4-194(1800/1800P/1600/1600P)
4-192(1400/1400P/1200/1200P)



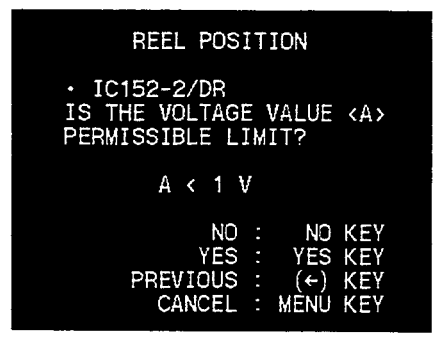

```
        REEL POSITION

 • CN352-2/MS
 IS THE VOLTAGE VALUE <A>
 PERMISSIBLE LIMIT?

         A > 10 V

             NO :   NO KEY
            YES :  YES KEY
       PREVIOUS :   (←) KEY
         CANCEL : MENU KEY
```

• CN352/MS-39 (F-1)

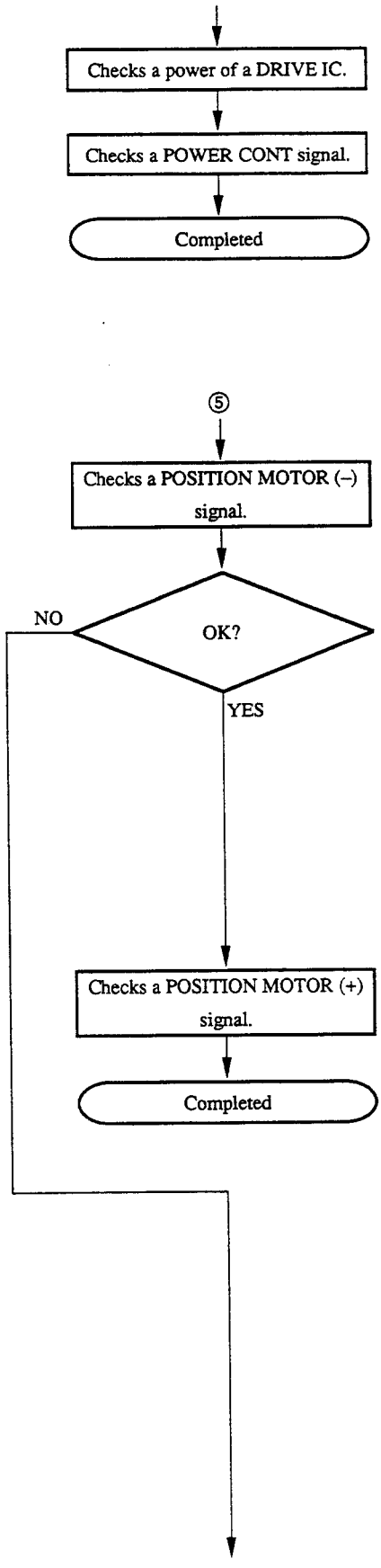


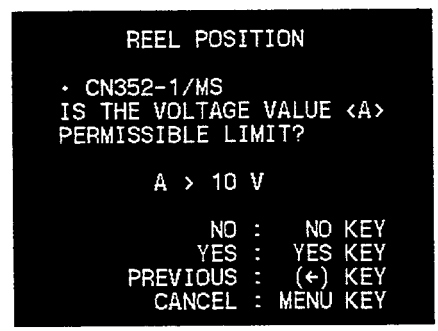


• IC152/DR-214 (L-4)



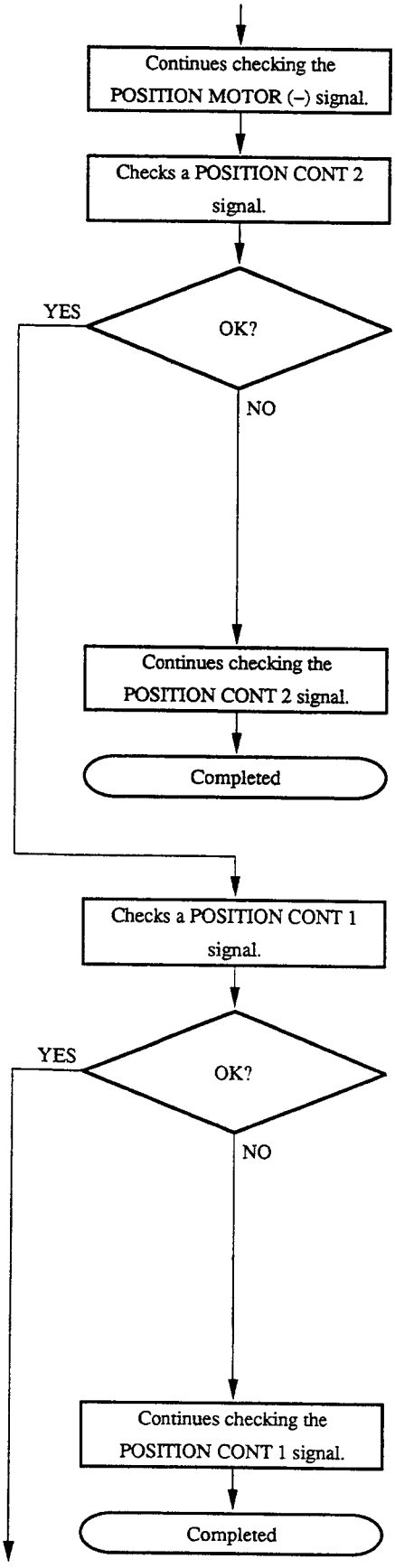
• IC152/DR-214 (L-4)





• CN352/MS-39 (F-1)

Continues to the next page.



REEL POSITION

• IC152-2/DR
IS THE VOLTAGE VALUE <A>
PERMISSIBLE LIMIT?

A > 4 V

NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

• IC152/DR-214 (L-4)

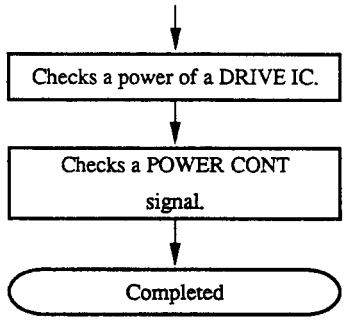
REEL POSITION

• IC152-1/DR
IS THE VOLTAGE VALUE <A>
PERMISSIBLE LIMIT?

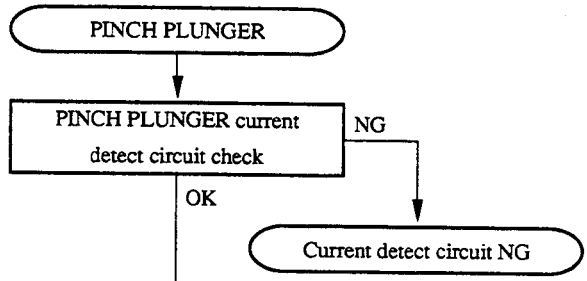
A < 1 V

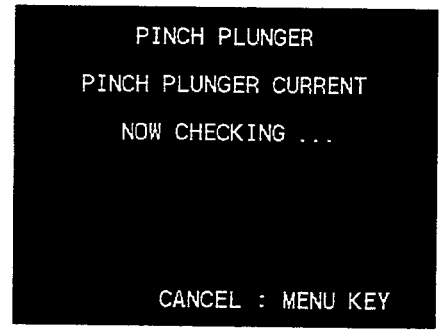
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

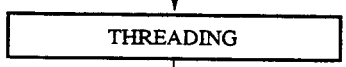
• IC152/DR-214 (L-4)

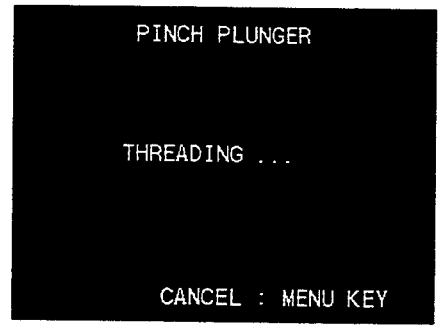

Checks a power of a DRIVE IC.
Checks a POWER CONT signal.
Completed

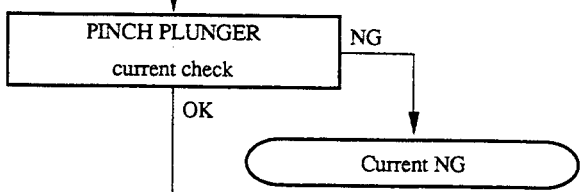
(14) PINCH PLUNGER Diagnosis

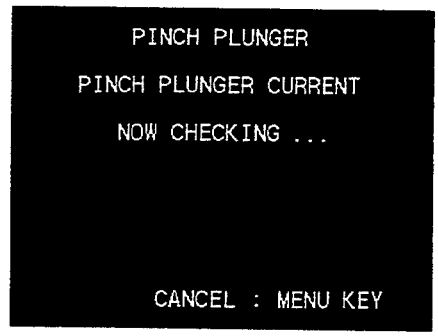




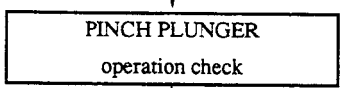


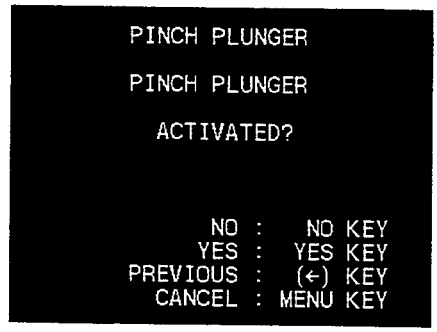






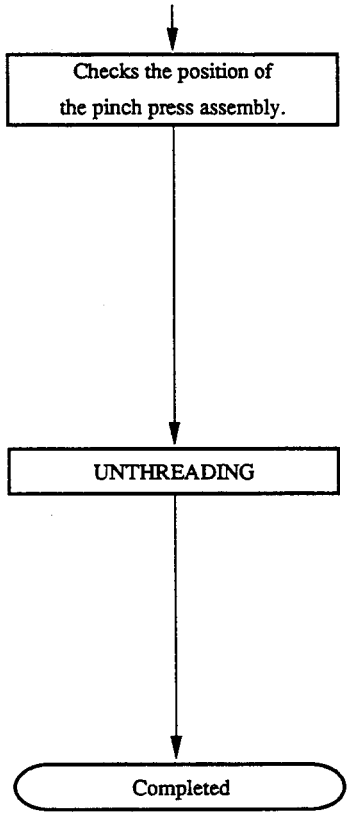
- The unit checks automatically.

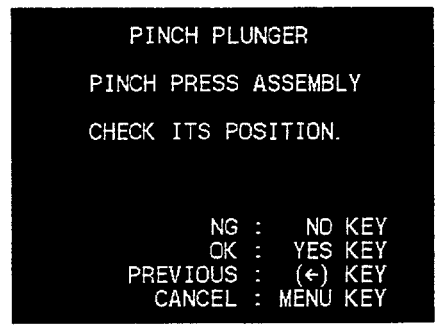




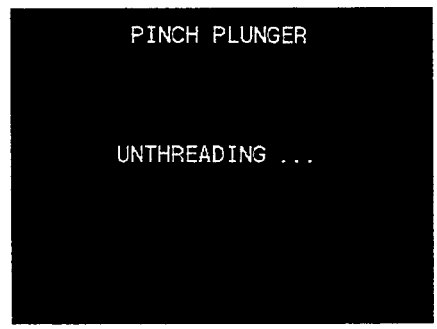
- Check that the pinch plunger is ON and against the capstan motor.

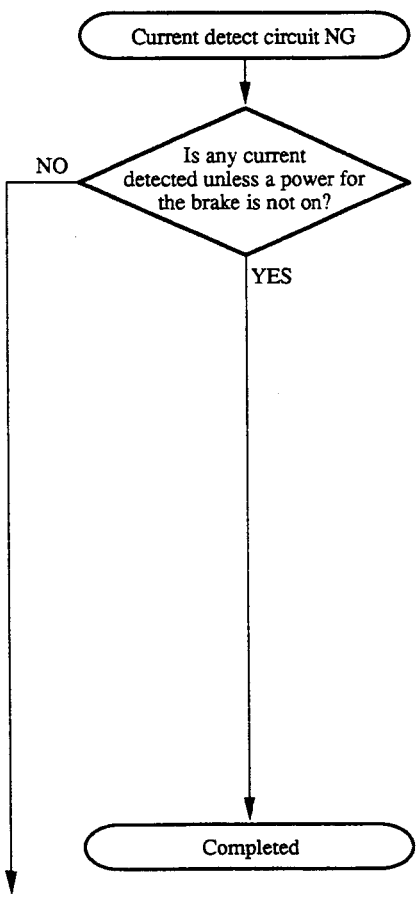
4-200 (1800/1800P/1600/1600P)
4-198 (1400/1400P/1200/1200P)

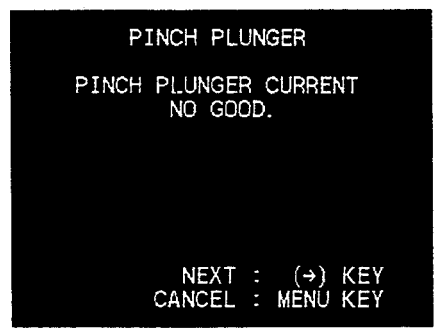


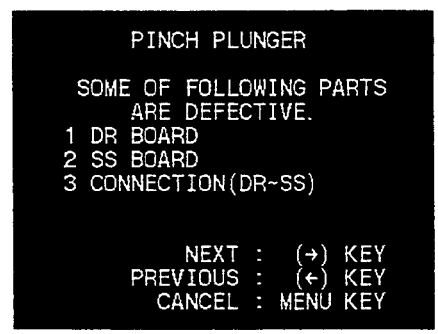


- Refer to section 6-17-1 in Service Manual Vol. 1.



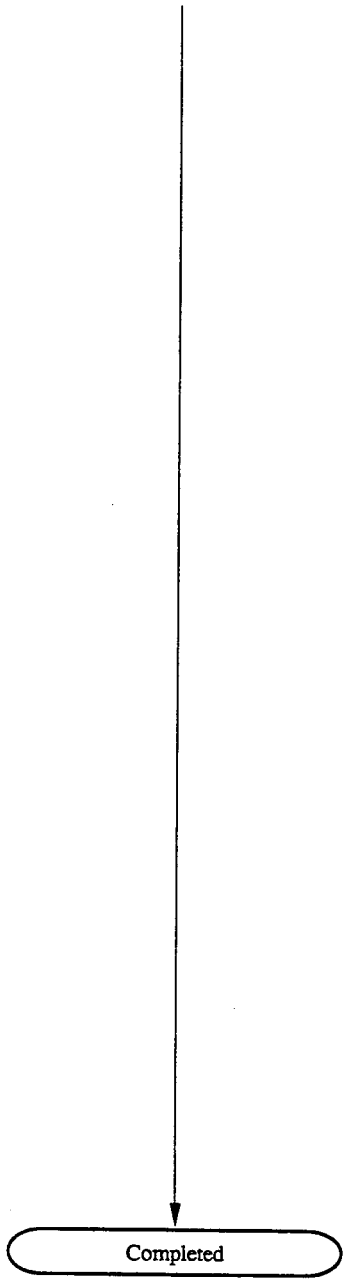






- The probable cause is that the current detect circuit is defective.

Continues to the next page.



PINCH PLUNGER

PINCH PLUNGER CURRENT
NO GOOD.

NEXT : (→) KEY
CANCEL : MENU KEY

PINCH PLUNGER

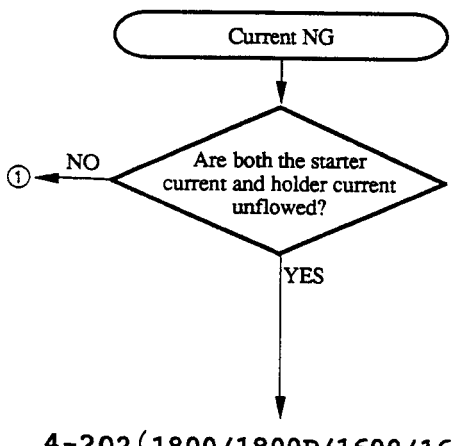
SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 MS BOARD
2 DR BOARD
3 RM-126 BOARD
3 PD-35 BOARD
CONTINUED···
NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

PINCH PLUNGER

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
3 PINCH PLUNGER
3 S-REEL BRAKE PLUNGER
3 UNREG +12V LINE

NEXT : (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

- The probable cause is that any current is flowed by the cause such as a shorting of the signal line.
  The other cause is that the S REEL BRAKE system is defective because the current detect circuit is used for both the PINCH PLUNGER and the S REEL BRAKE.

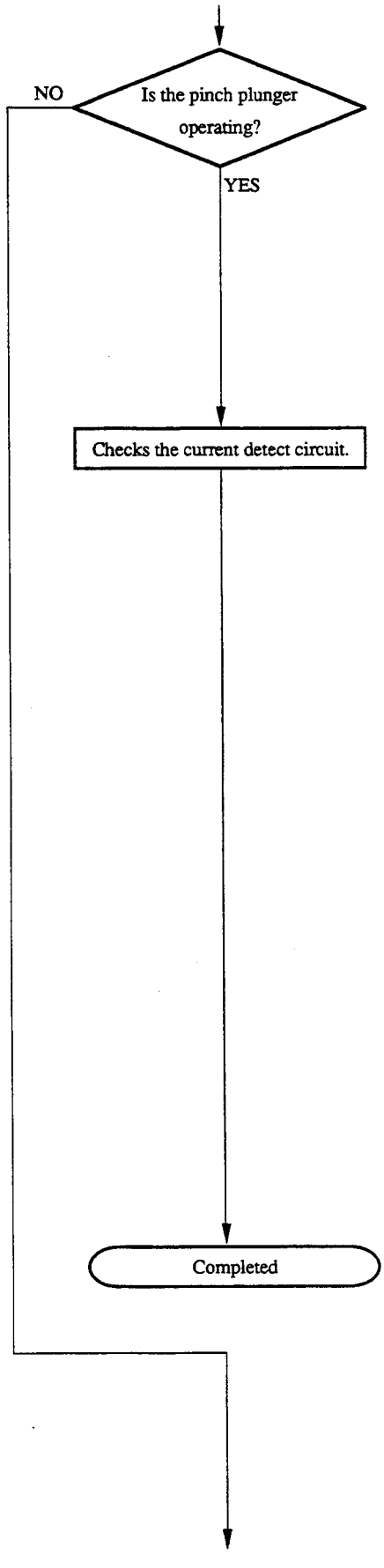


PINCH PLUNGER

PINCH PLUNGER CURRENT
NO GOOD.

NEXT : (→) KEY
CANCEL : MENU KEY

4-202(1800/1800P/1600/1600P)
4-200(1400/1400P/1200/1200P)




```
      PINCH PLUNGER

      PINCH PLUNGER

        ACTIVATED?


            NO :   NO KEY
           YES :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

- Check that the pinch roller is against the capstan or not.

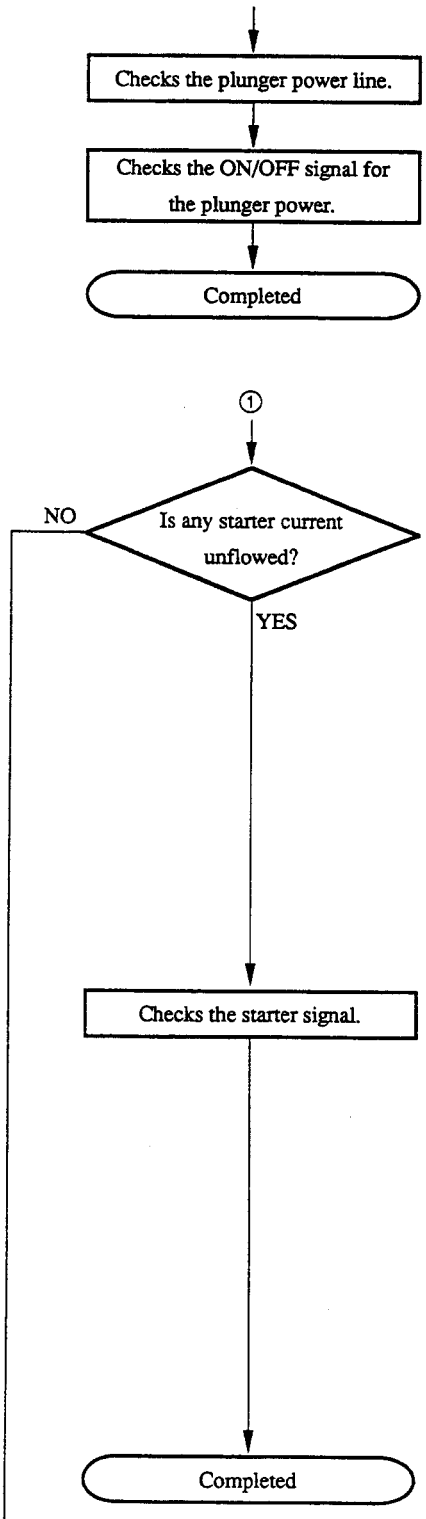
```
      PINCH PLUNGER

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
  1 CONNECTION(DR~SS)
  2 SS BOARD



          NEXT :  (→) KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

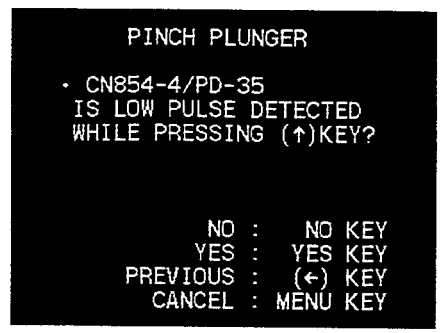
- The probable cause is the faulty connections of connectors or a break in the signal line on the SS board.

```
      PINCH PLUNGER

  SOME OF FOLLOWING PARTS
      ARE DEFECTIVE.
  1 DR BOARD
  2 SS BOARD
  3 MB BOARD


          NEXT :  (→) KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

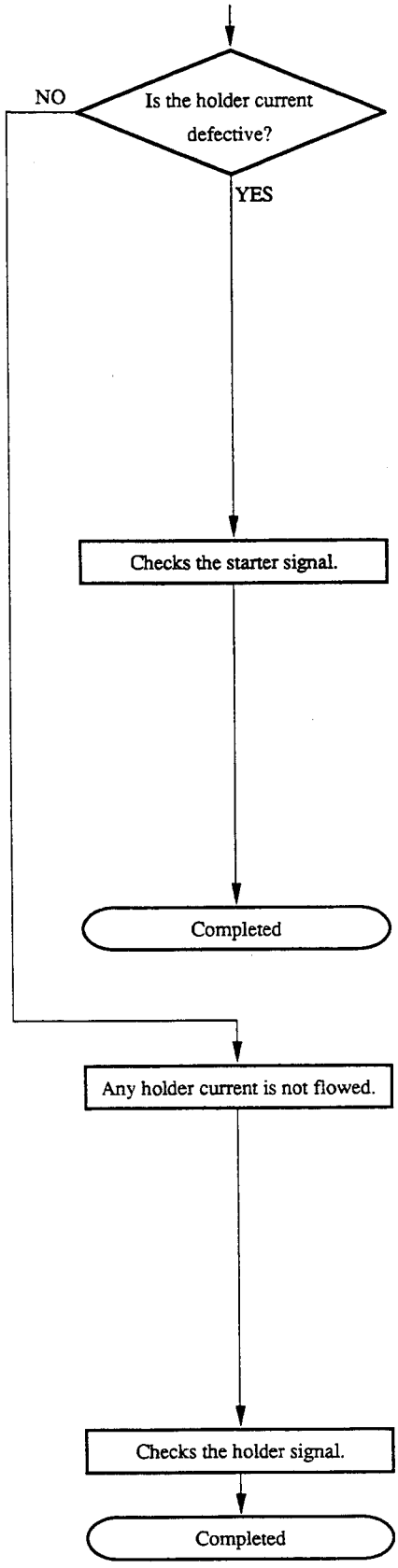
- The probable cause is that the current detecting circuit on the DR board is defective or a SOL. CURRENT signal is shorted on the SS, MB or DR board.

Continues to the next page.





- Check that about 300 msec pulse occurs every a second while pressing the (↑) key.
- Check that the voltage is more than 10 V while not pressing the (↑) key.



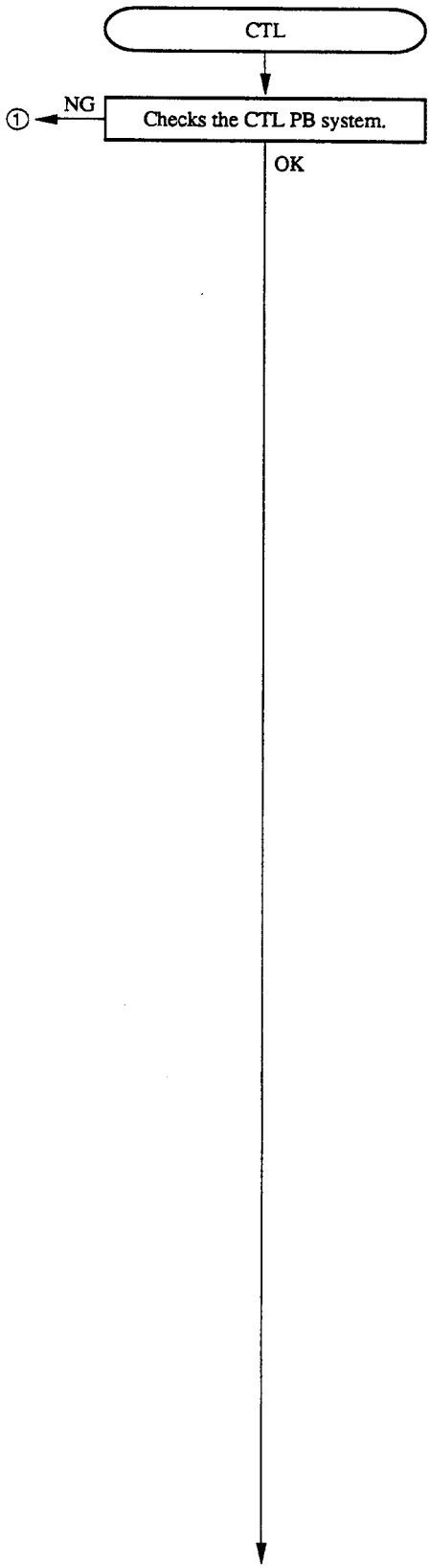

```
PINCH PLUNGER

PINCH HOLDER CURRENT
NO GOOD.

NEXT :  (→) KEY
CANCEL : MENU KEY
```

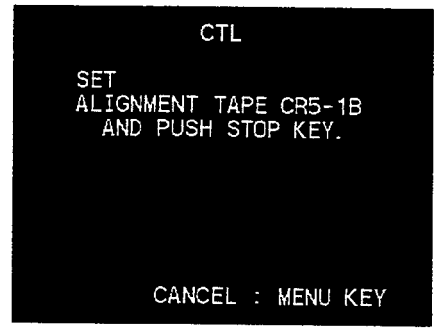
```
PINCH PLUNGER

SOME OF FOLLOWING PARTS
ARE DEFECTIVE.
1 MS BOARD
2 PD-35 BOARD
3 PINCH PLUNGER

NEXT :  (→) KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY
```

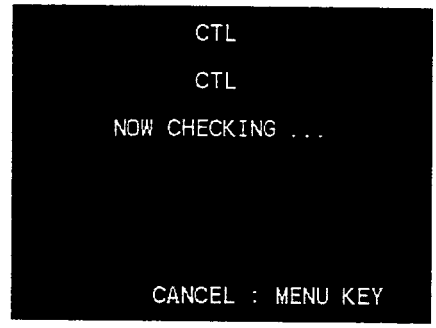
- The starter continues operating.

```
PINCH PLUNGER

PINCH HOLDER CURRENT
NO GOOD.

NEXT :  (→) KEY
CANCEL : MENU KEY
```

(15) CTL Diagnosis

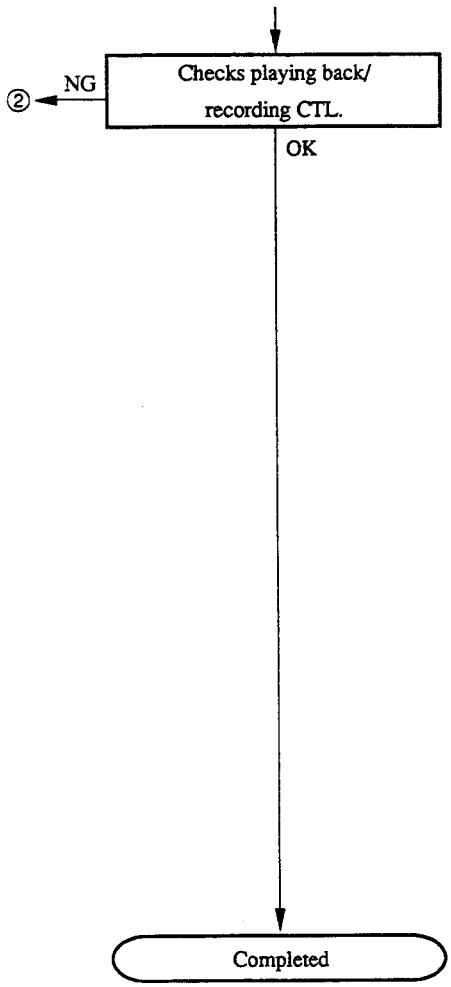


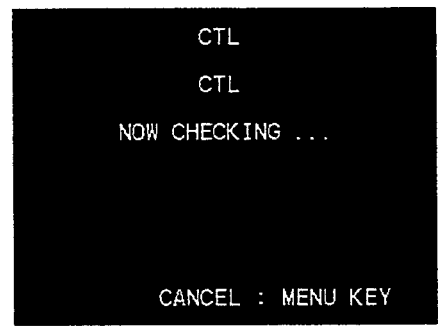




- Using a reference tape, the unit checks the CTL PB system automatically.

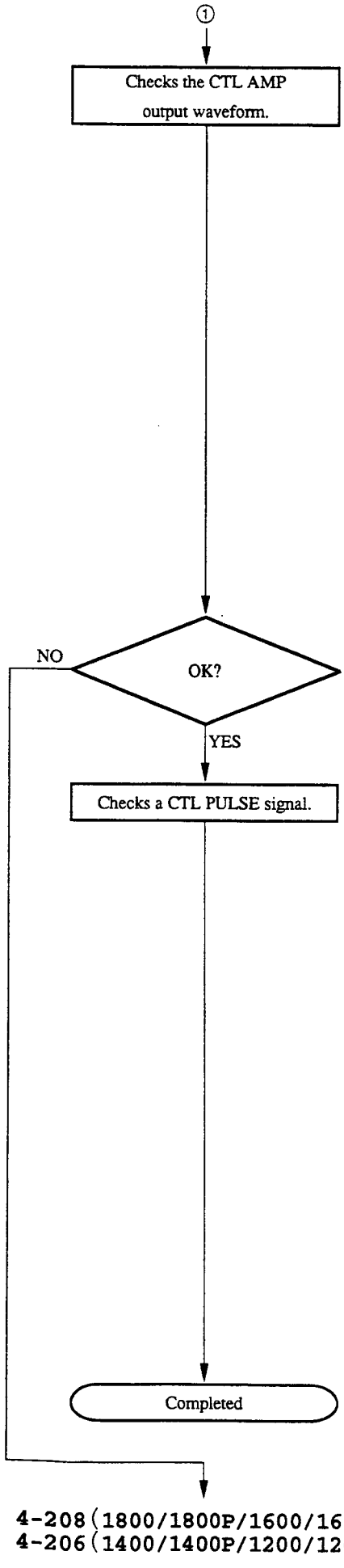
4-206(1800/1800P/1600/1600P)
4-204(1400/1400P/1200/1200P)



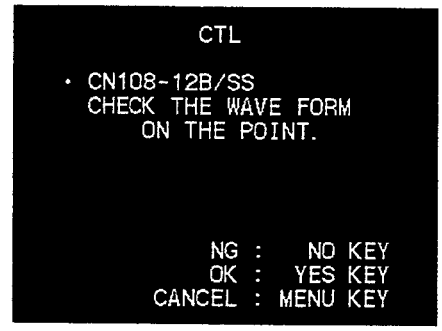


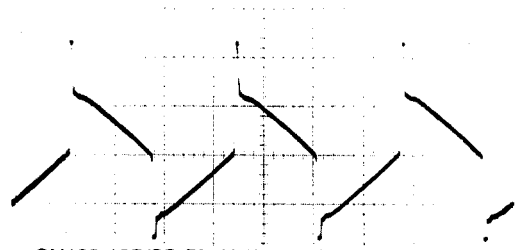
- Using a blank tape (no signal is recorded.), record a CTL signal. Then, play back the recorded portion.

Note : If using the tape with recorded signals, the unit cannot decide whether the tape is recorded this time or not. Therefore, be sure to use a blank tape.

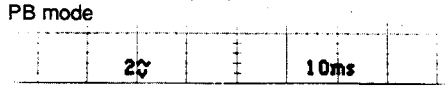


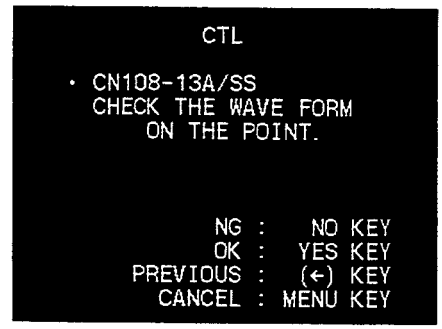
4-208 (1800/1800P/1600/1600P)
4-206 (1400/1400P/1200/1200P)

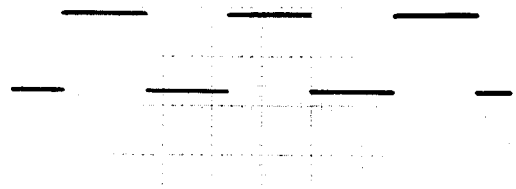




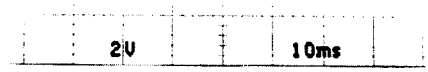
• CN108-12B/SS-53 (K-6) waveform
PB mode



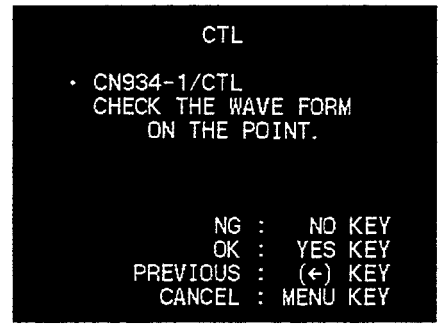


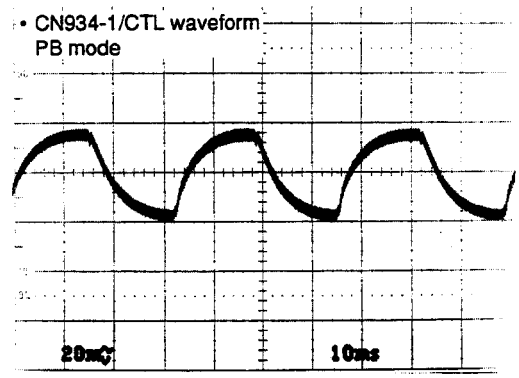


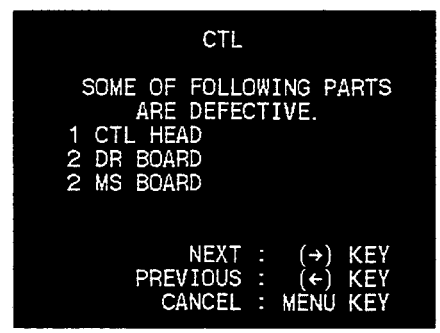
• CN108-13A/SS-53 (K-6) waveform
PB mode



Checks the waveform of
the CTL HEAD output signal.

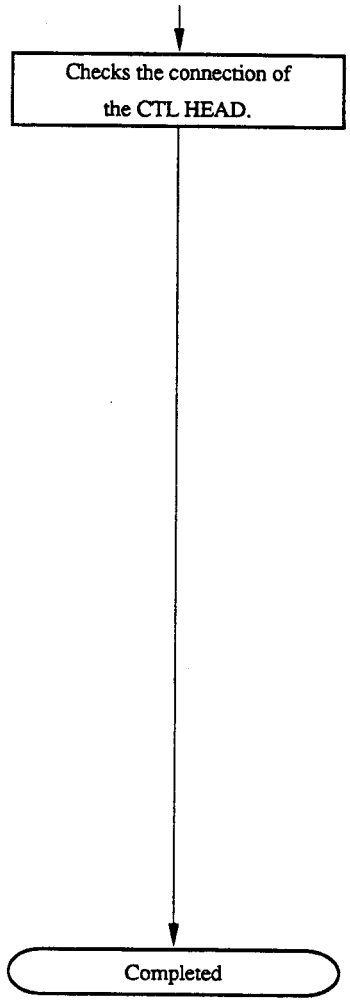


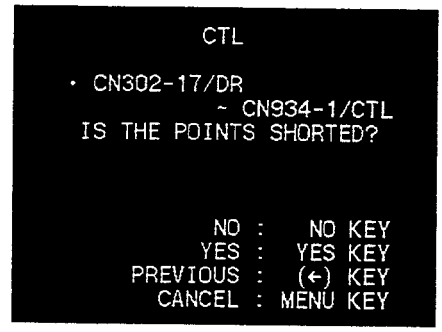




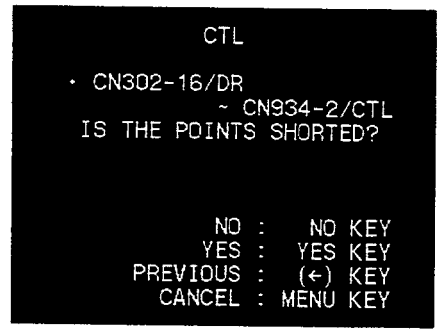
- Perform the CTL head adjustment and check with referring to sections 7-6 and 7-7 in Service Manual Vol. 1.

Continues to the next page.



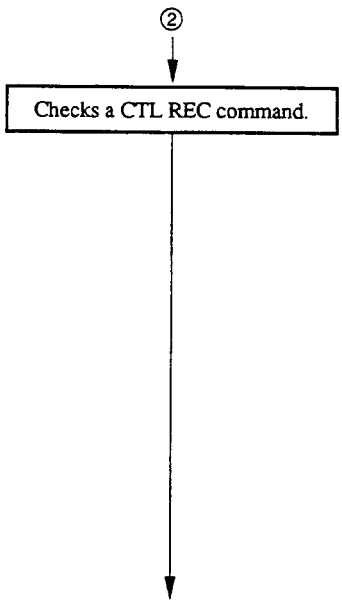


• CN302/DR-214 (H-5)



• CN302/DR-214 (H-5)

• Stop the diagnosis and turn off the power. Then, check the connections by using a tester and so on.
After checking, turn on the power and continue the diagnosis.



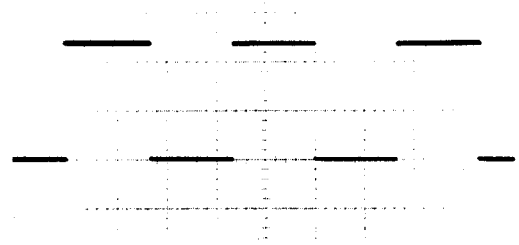
4-210(1800/1800P/1600/1600P)
4-208(1400/1400P/1200/1200P)

Checks a REC CTL signal.

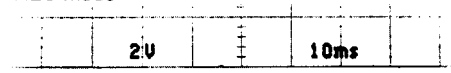
CTL

• CN300-35B/DR
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



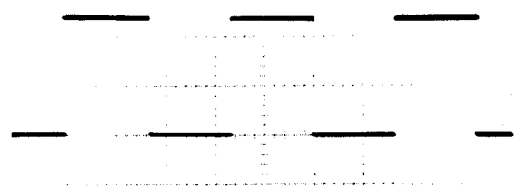
• CN300-35B/DR-214 (H-1) waveform
REC mode



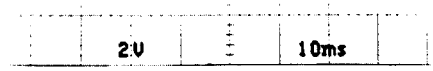
CTL

• CN108-13B/SS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

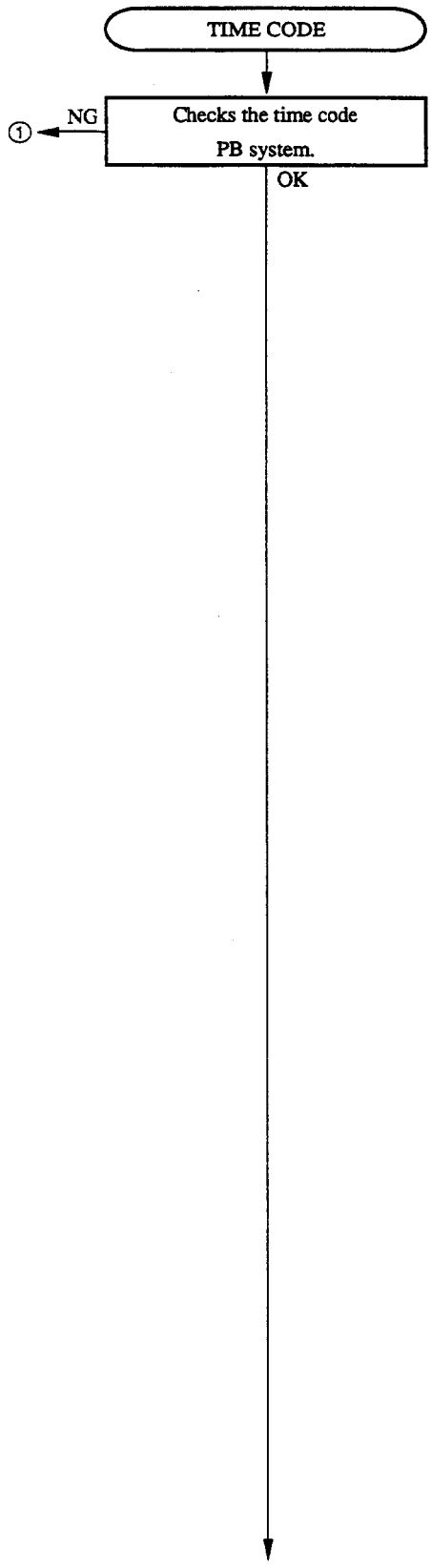


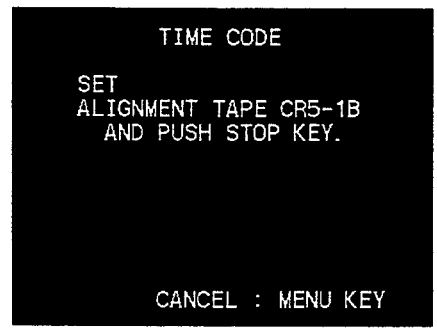
• CN108-13B/SS-53 (K-6) waveform
REC mode

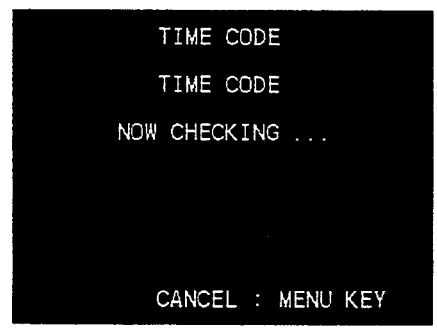


Completed

(16) TIME CODE Diagnosis

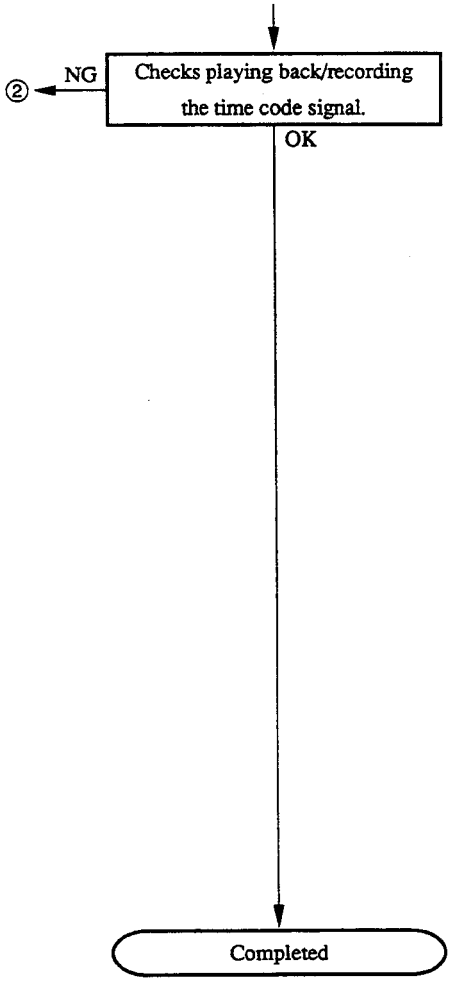


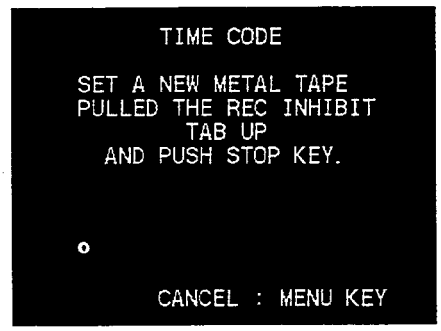


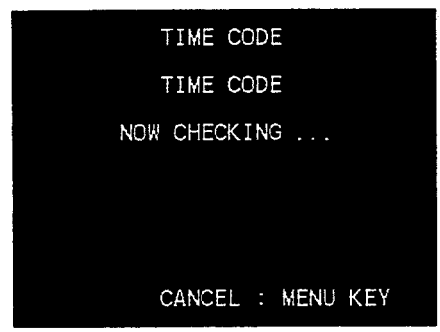


- Using a reference tape, the unit checks the time code PB system automatically.

4-212 (1800/1800P/1600/1600P)
4-210 (1400/1400P/1200/1200P)







- Using a blank tape (no signal is recorded.), the unit automatically records a time code signal. Then, play back the recorded portion.

Note : If using the tape with recorded signals, the unit cannot decide whether the tape is recorded at this time or not. Therefore, be sure to use a blank tape.

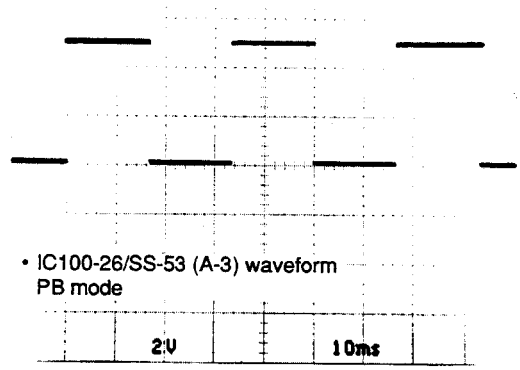
①

Checks a CTL PULSE signal.

TIME CODE

・ IC100-26/SS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
CANCEL : MENU KEY



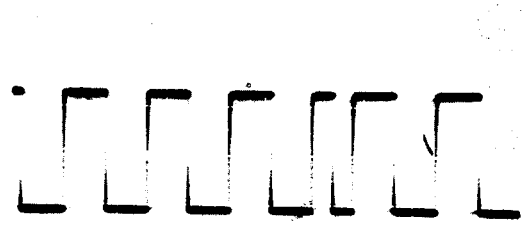
• IC100-26/SS-53 (A-3) waveform
PB mode

Checks a PB LTC signal.

TIME CODE

・ CN109-14A/SS
CHECK THE WAVE FORM
ON THE POINT.

NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY



• CN109-14A/SS-53 (C-6) waveform
PB mode

2 V 500 μs

4-214 (1800/1800P/1600/1600P)
4-212 (1400/1400P/1200/1200P)

Checks a TC HEAD input signal.

```
TIME CODE

· TC HEAD CONNECTOR-1/AP
  CHECK THE WAVE FORM
      ON THE POINT.


            NG :   NO KEY
            OK :  YES KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

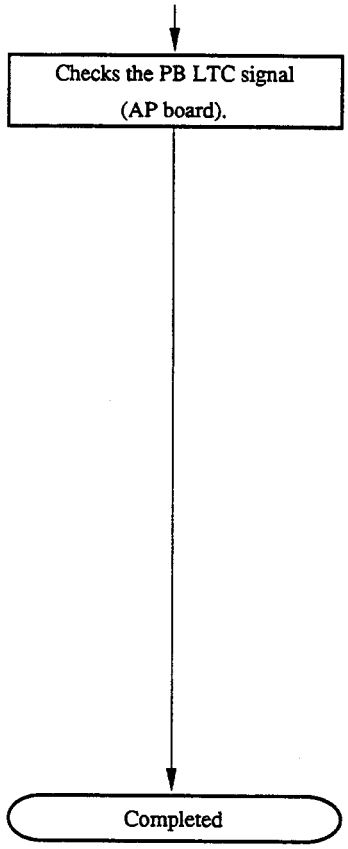
• CN3-1/AP-31 (G-4) waveform
PB mode

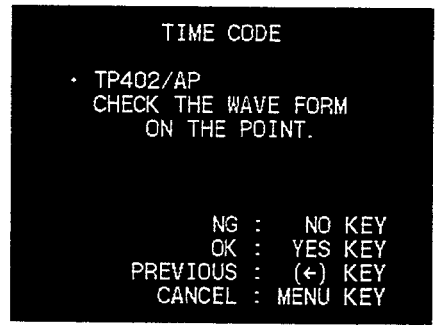
10 mV 500 μs

```
TIME CODE

 SOME OF FOLLOWING PARTS
     ARE DEFECTIVE.
1 TC HEAD
1 HARNESS(TC-AP)
2 AP BOARD


          NEXT :  (→) KEY
      PREVIOUS :  (←) KEY
        CANCEL : MENU KEY
```

• Refer to sections 7-8 through 7-11 in Service Manual Vol. 1.

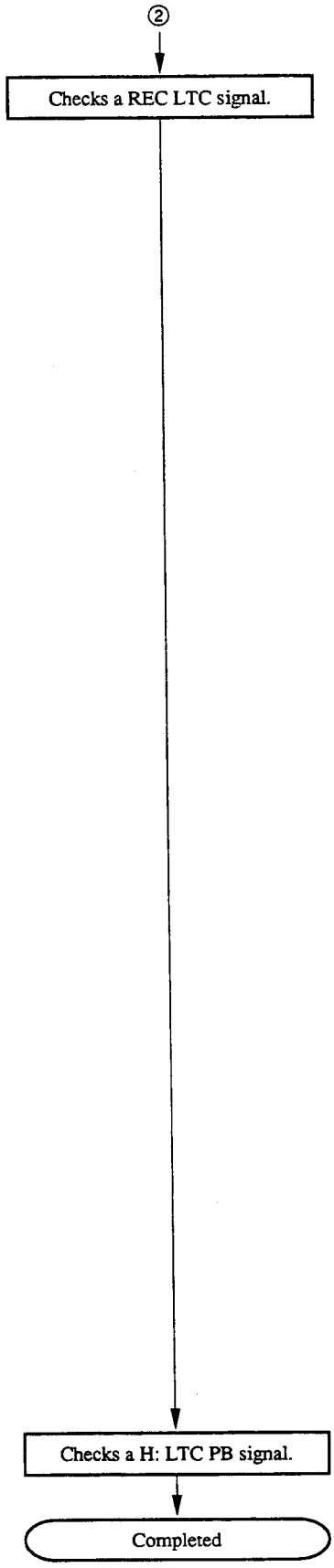
Continues to the next page.

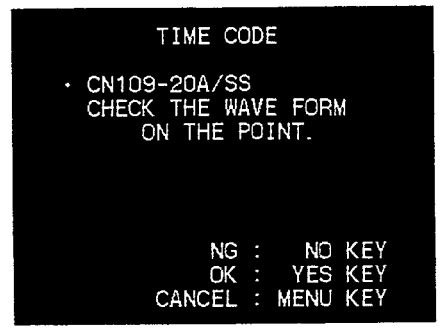


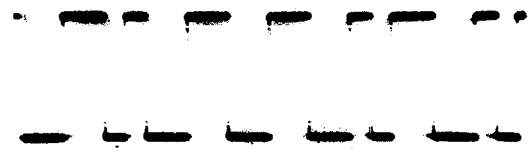


• TP402/AP-31 (G-5) waveform
PB mode

2 V 500 μs

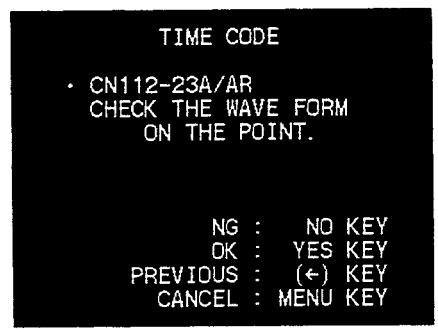


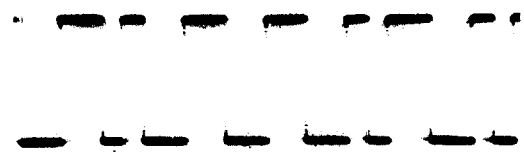




• CN109-20A/SS-53 (C-6) waveform
REC mode

2 V 500 μs



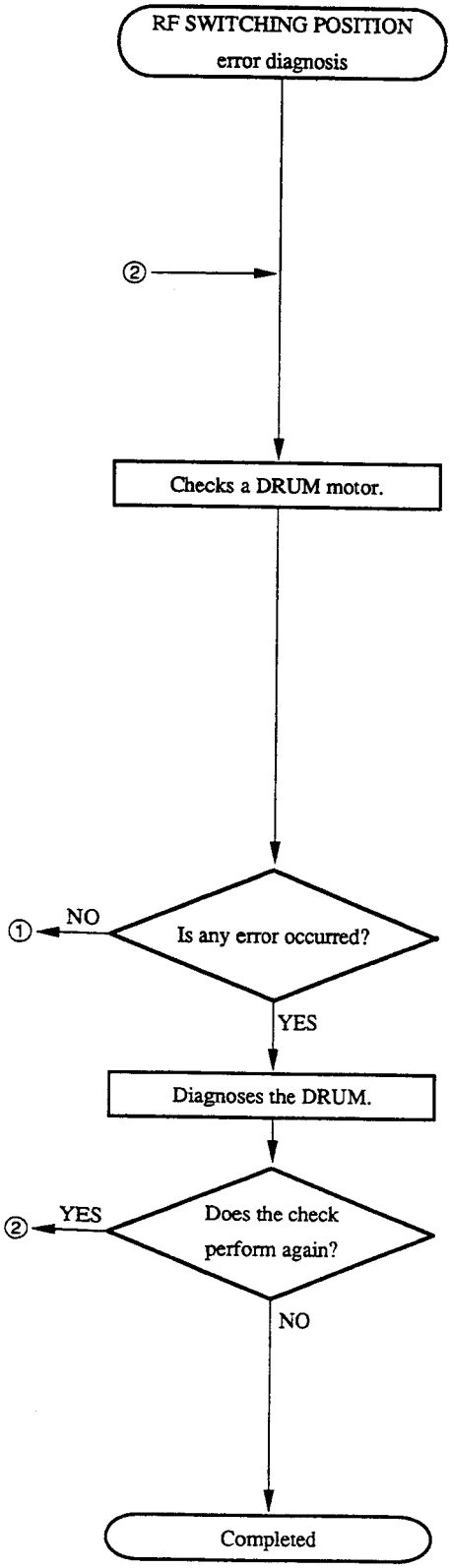


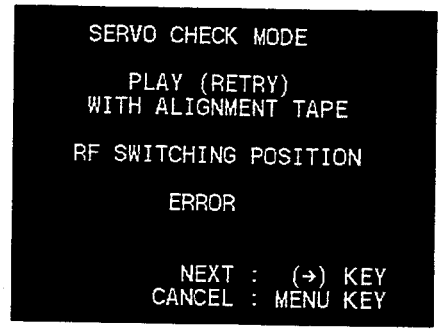
• CN112-23A/AR-14 (E-5) waveform
REC mode

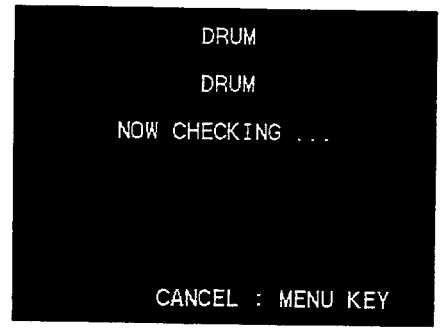
2 V 500 μs

(17) SW POS NG

- SW POSITION is checked at WITH ALIGNMENT TAPE of AUTO CHECK in SERVO CHECK menu. When any error occurs at the SW POSITION menu, perform diagnosis as follows;

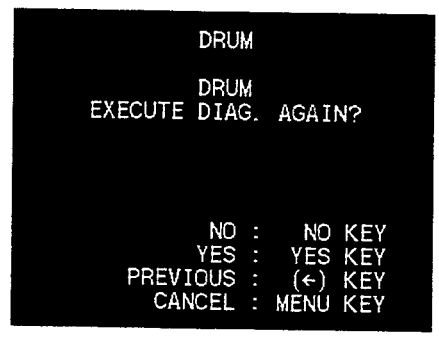


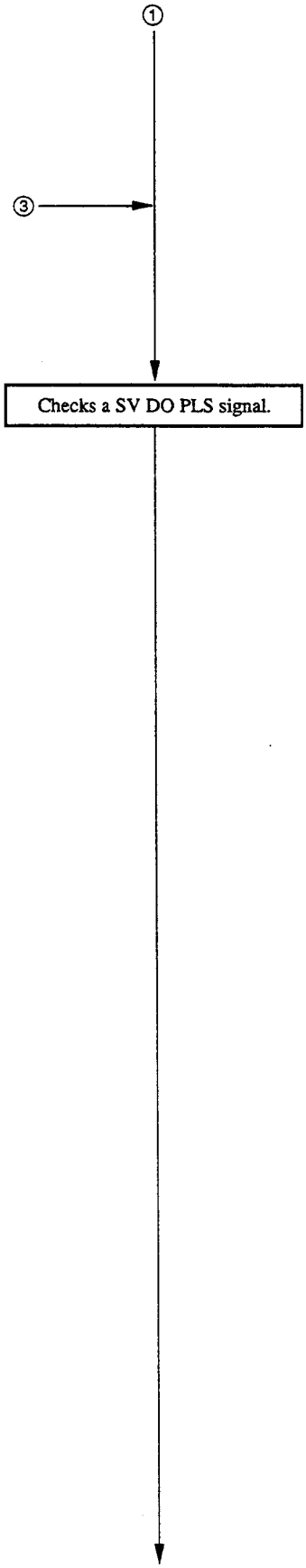


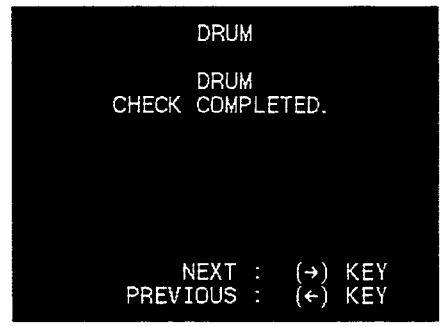


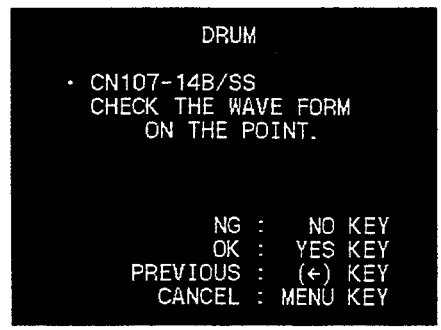
- For details, refer to the flowchart as shown in (12) DRUM Diagnosis.

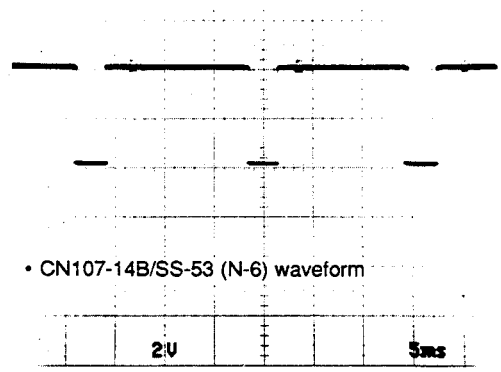
- For details, refer to the flowchart as shown in (12) DRUM Diagnosis.



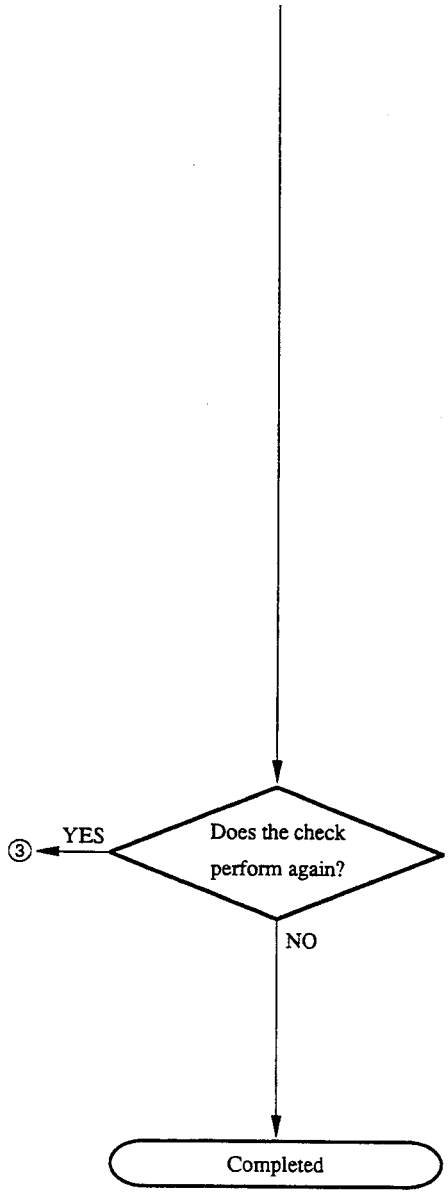


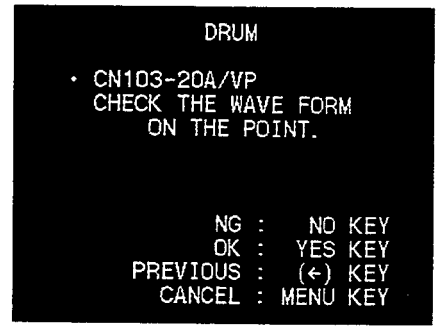


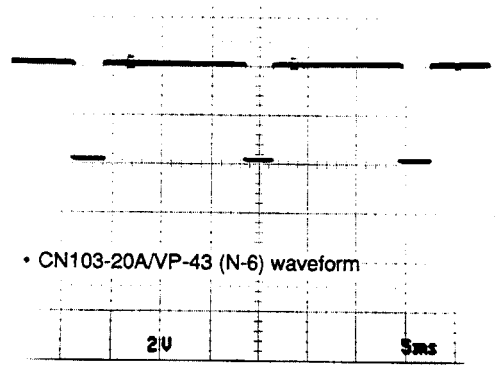


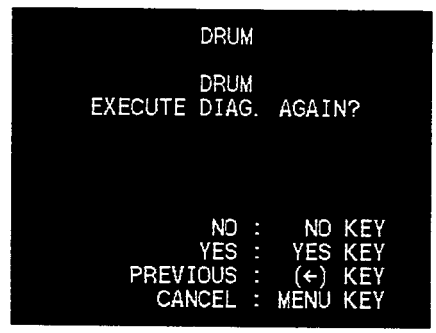


Continues to the next page.


YES
③
Does the check perform again?
NO
Completed

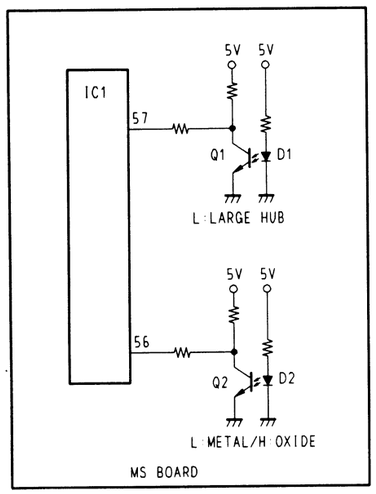

DRUM
• CN103-20A/VP
CHECK THE WAVE FORM
ON THE POINT.
NG : NO KEY
OK : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY


• CN103-20A/VP-43 (N-6) waveform
2V
5ms

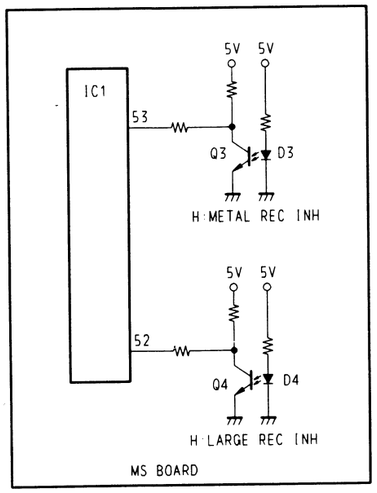

DRUM
DRUM
EXECUTE DIAG. AGAIN?
NO : NO KEY
YES : YES KEY
PREVIOUS : (←) KEY
CANCEL : MENU KEY

BLOCK DIAGRAM

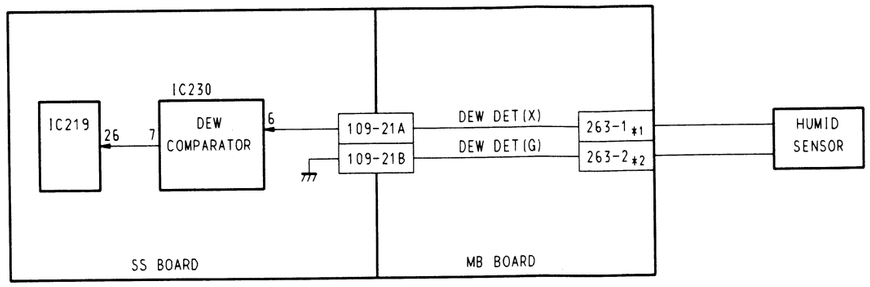
• CASSETTE ID



• REC INHIBIT

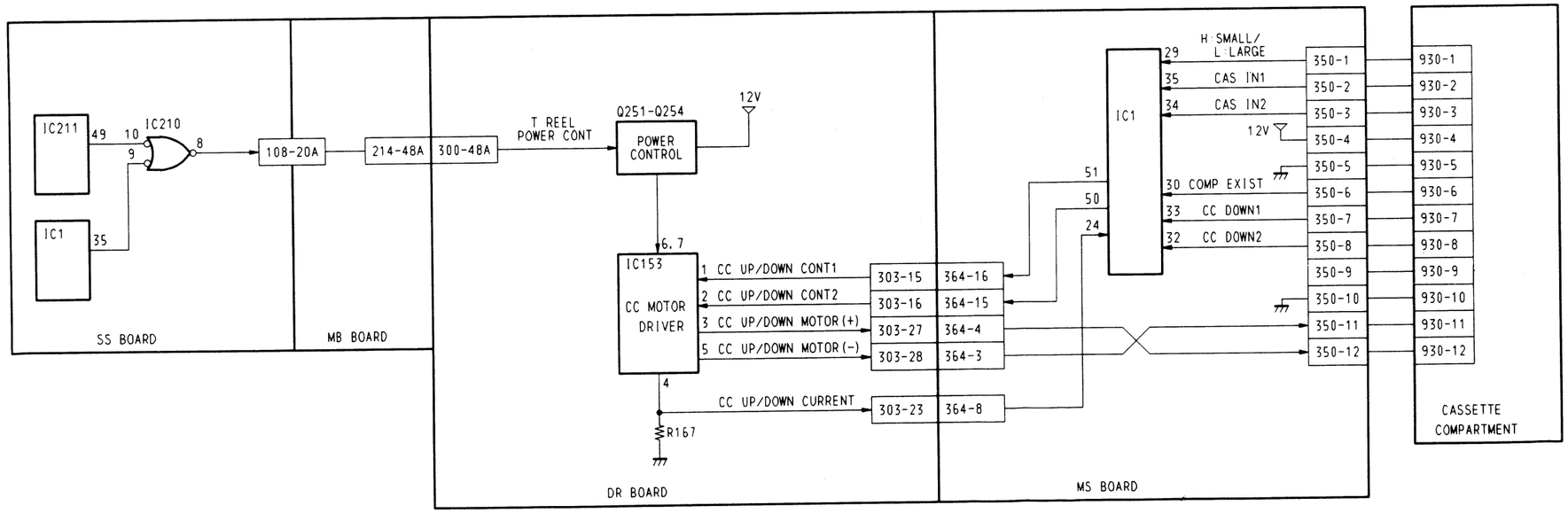


• HUMID SENSOR



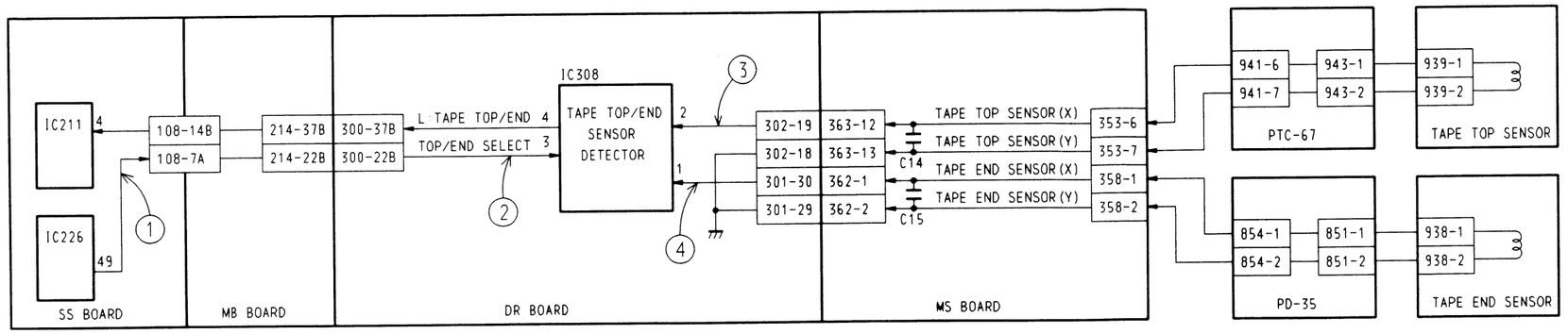
*1 UVW-1200/1200P : 234-1
*2 UVW-1200/1200P : 234-2

• CASSETTE COMPARTMENT

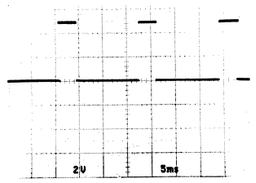


4-221(1800/1800P/1600/1600P)
4-219(1400/1400P/1200/1200P)

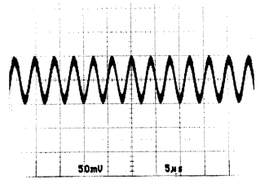
• TAPE TOP/END SENSOR



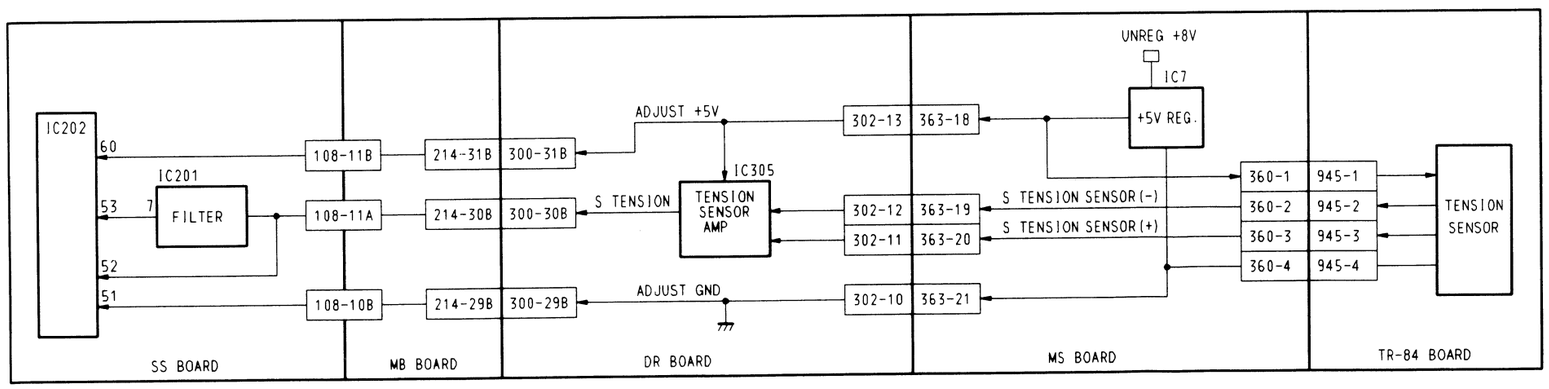
①②



③④

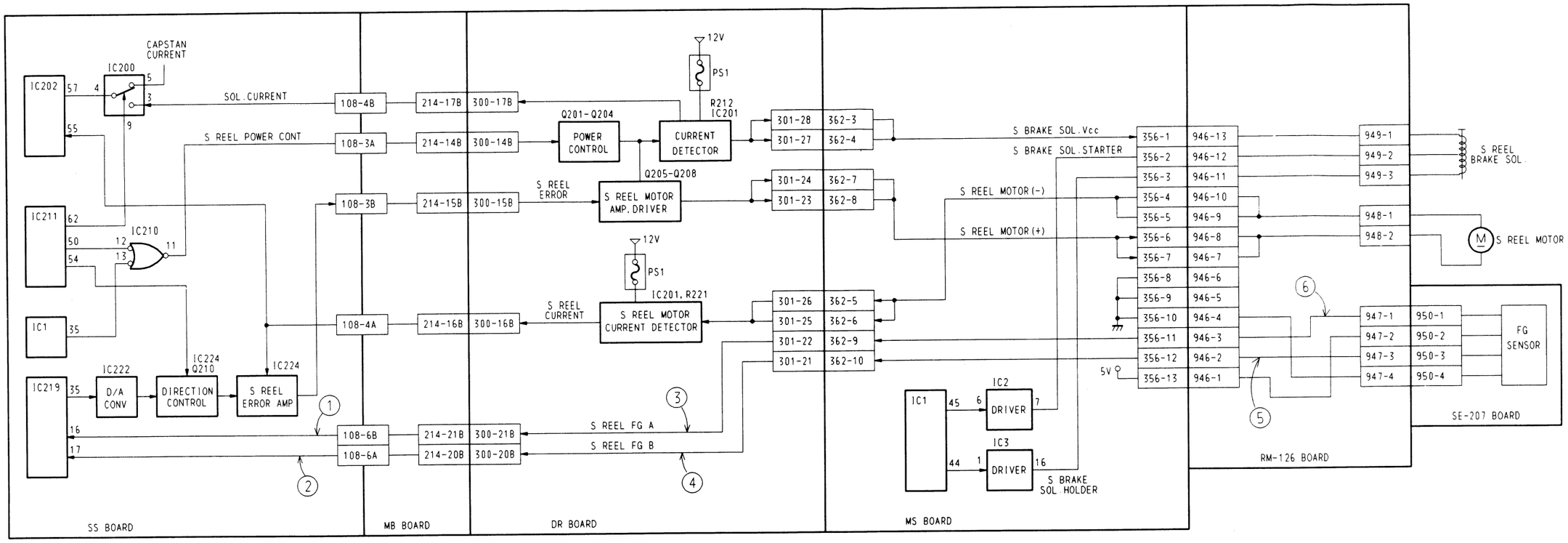


• TENSION SENSOR

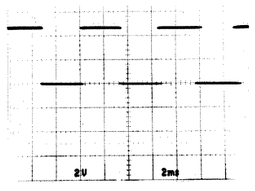


4-223(1800/1800P/1600/1600P)
4-221(1400/1400P/1200/1200P)

• **S REEL**

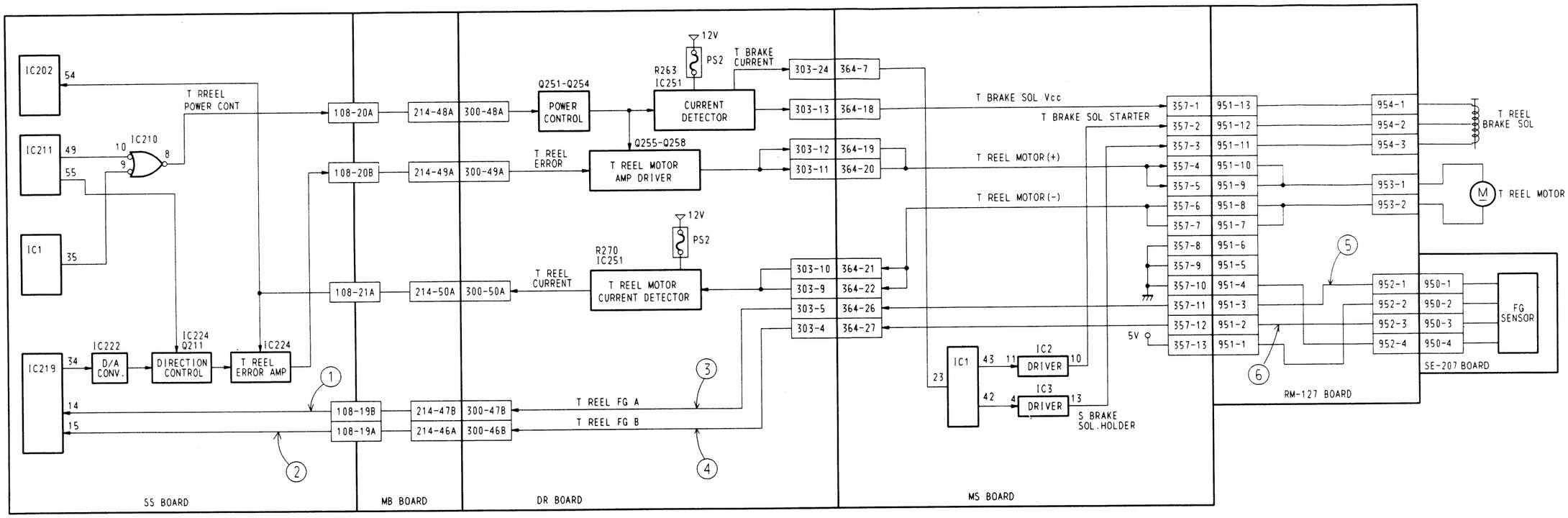


①—⑥

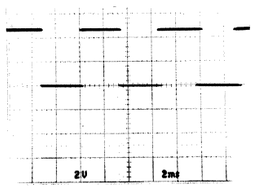


4-225 (1800/1800P/1600/1600P)
4-223 (1400/1400P/1200/1200P)

• T REEL

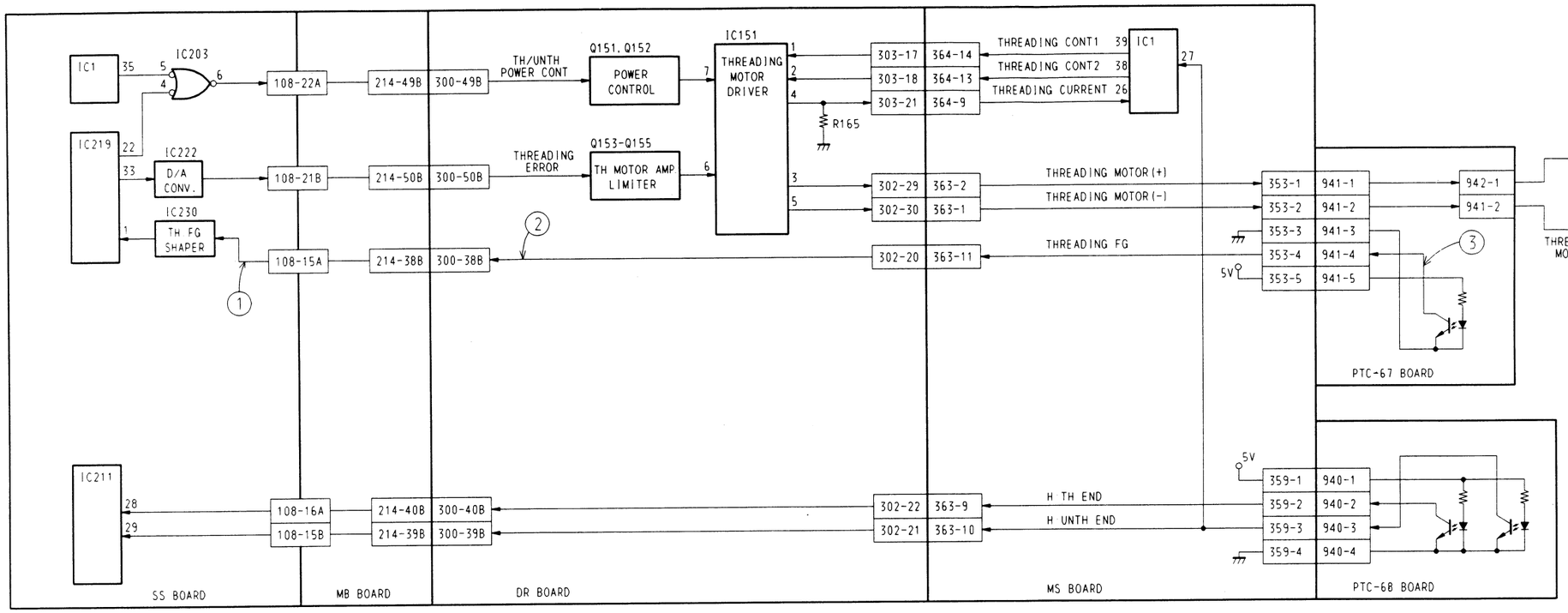


①–⑥

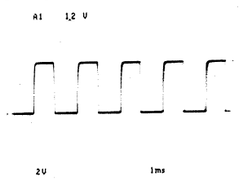


4-227(1800/1800P/1600/1600P)
4-225(1400/1400P/1200/1200P)

• **THREADING**

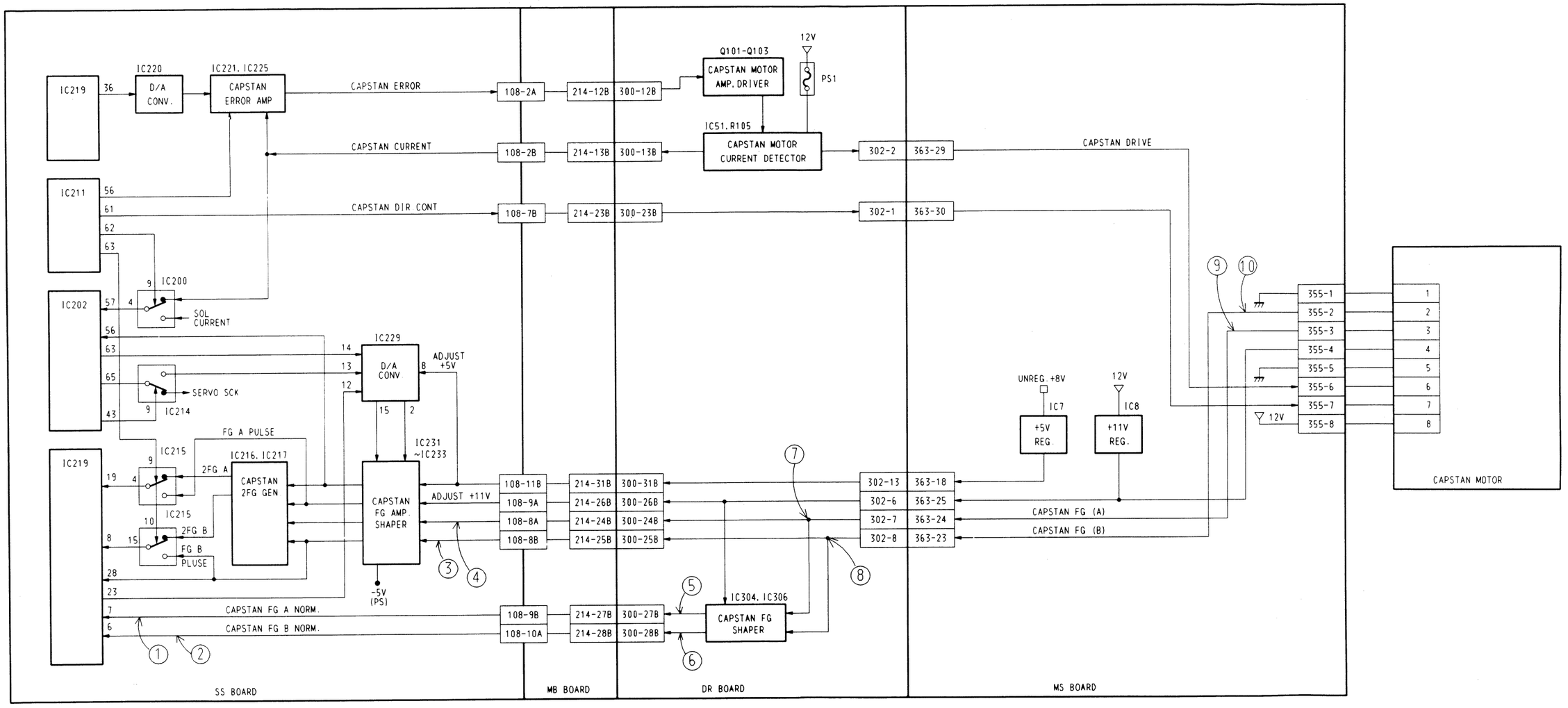


①–③

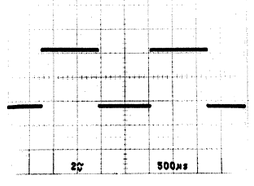


4-229 (1800/1800P/1600/1600P)
4-227 (1400/1400P/1200/1200P)

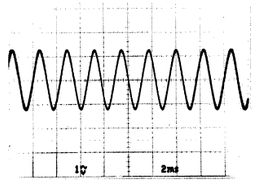
• CAPSTAN



①②⑤⑥

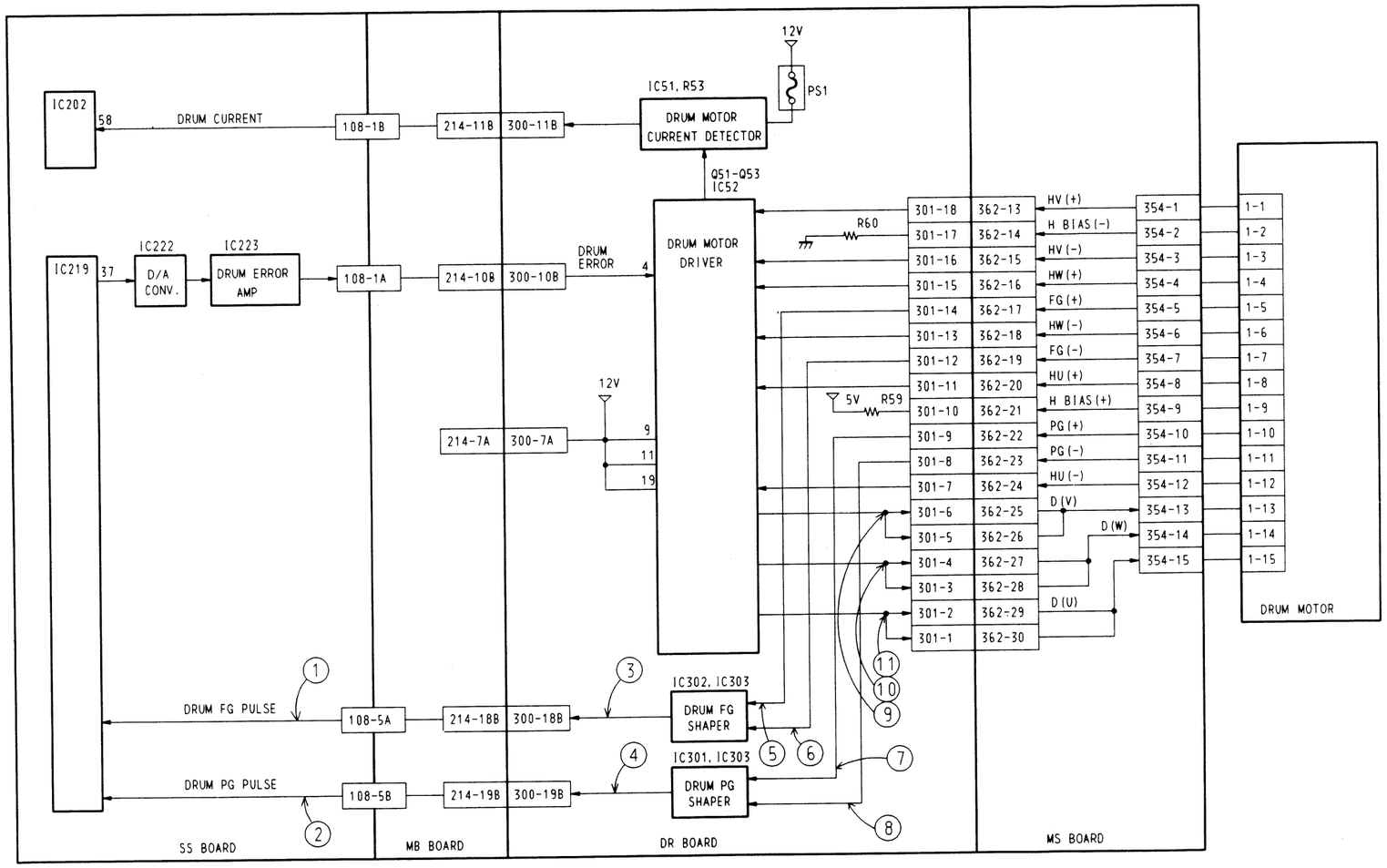


③④⑦⑧⑨⑩

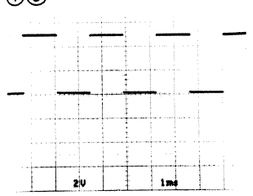


4-231 (1800/1800P/1600/1600P)
4-229 (1400/1400P/1200/1200P)

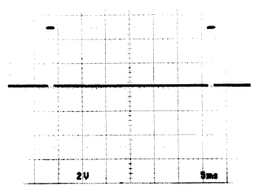
• **DRUM**



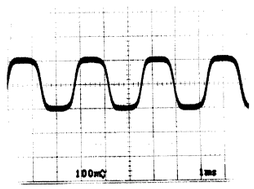
①③



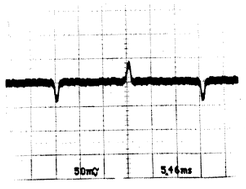
②④



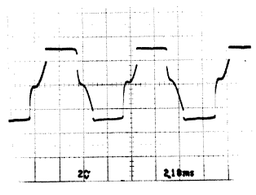
⑤⑥



⑦⑧

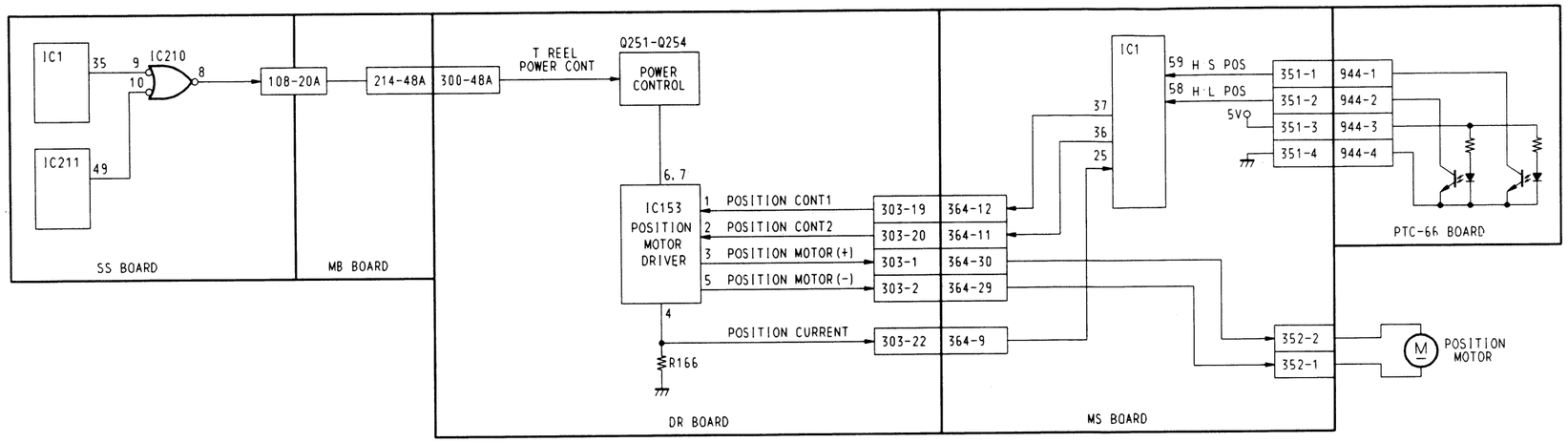


⑨⑩⑪

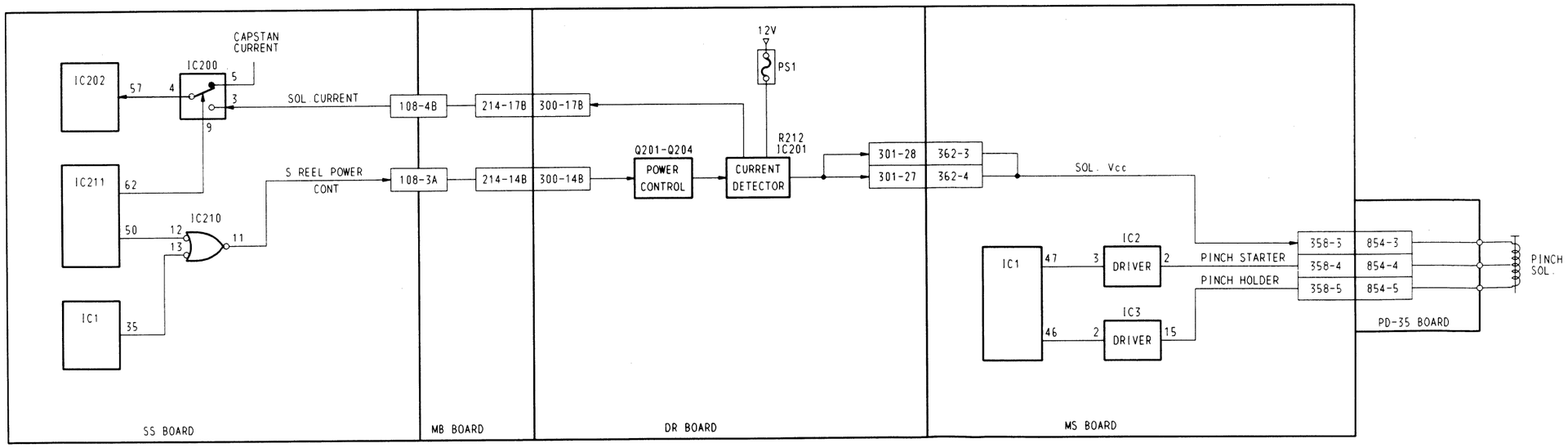


4-233 (1800/1800P/1600/1600P)
4-231 (1400/1400P/1200/1200P)

• **REEL POSITION**



• **PINCH**

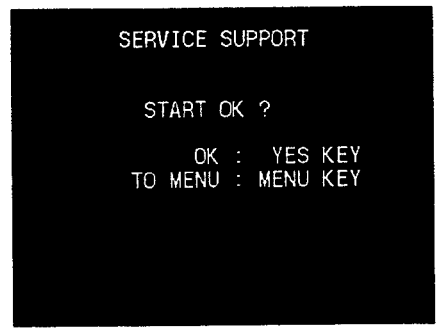


4-235 (1800/1800P/1600/1600P)
4-233 (1400/1400P/1200/1200P)

MANUAL EJECT

The operating method to take out the tape when the normal EJECT is impossible is displayed.

Select the SET (YES) key, and the "MANUAL EJECT" is entered.
Take out the tape according to the instruction on screen.



DIAGNOSTICS CONTROL

This item has the function to delete the all ERROR LOG with memorized.

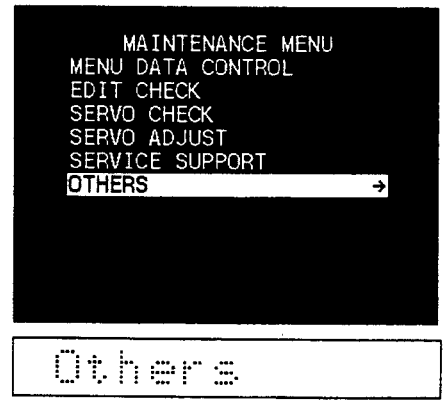
Press the YES key to delete the all ERROR LOG with memorized.
To stop deleting, press the MENU key.

4-7. OTHERS (1800/1800P/1600/1600P) 4-6. OTHERS (1400/1400P/1200/1200P)

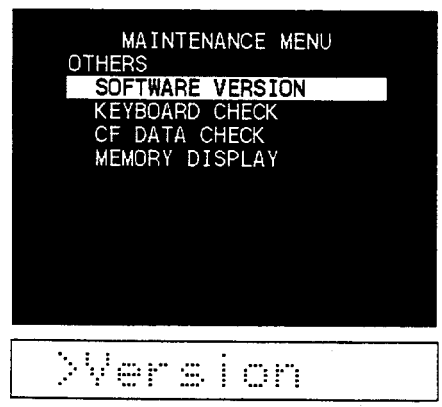
In this item, it is able to check the SOFT version, CF data and display contents of memory, etc.

[Procedure]

1. The unit enters into the maintenance menu.
2. Move the high lighted item to the "SERVO ADJUST" on the monitor display using the (↑), (↓) keys.



3. Press the (→) key.
   Then "SERVO ADJUST" is selected, and the menu of the lower level is displayed.



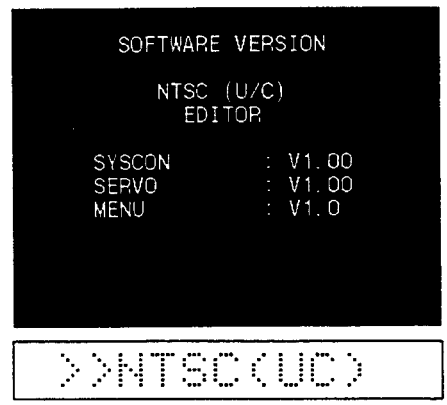
4. Move the high lighted item to the item to select, using the (↑), (↓) keys.
5. Press the (→) key.
   Then the menus of the lower levels are displayed.
6. Move the high lighted item to the item to select, using the (↑), (↓) keys.
7. Press the (→) key, and execute the high lighted item.
   (Refer to each page of item about a method of check.)
8. When check is finished, press the MENU key to return to the menu picture.
9. If there are other menus or sub menus wishing to be checked, repeat steps 4 to 8.
10. When closing the maintenance menu, press the MENU key.

SOFTWARE VERSION

Press the (←) key or RESET key to return to the maintenance menu.

NTSC (U) : NTSC, For UC
- EDITOR : Recorder and player of EDIT/1800
- FEEDER : Player of EDIT/1600
- RECORDER : Recorder and player/1400
- PLAYER : Player/1200

SYSCON : Version of IC4 on the SS-53 board
SERVO : Version of IC212 on the SS-53 board
MENU : Version of initial setup menu



* The content of display on the time counter can be changed by pressing the (↑) and (↓) keys.
  Returns to the maintenance menu using the (←) key or RESET key.

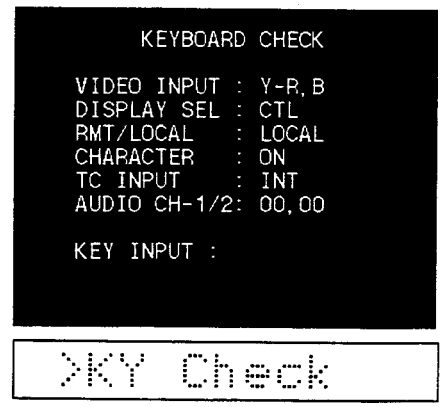
KEYBOARD CHECK

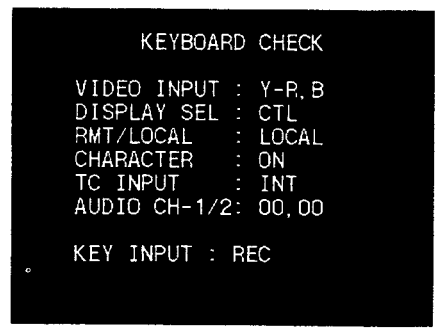
In this mode, it is able to check the key on the keyboard, slide switch and time counter.

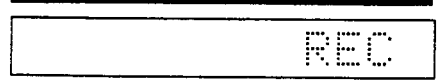
1. Press the SET (YES) key, to enter into the KEYBOARD CHECK.

> **Note :** Once a machine enters the KEYBOARD CHECK mode, it cannot exit without turning off the power.

2. The monitor displays settings of all switches on the sub control panel. All dots of the time counter light.

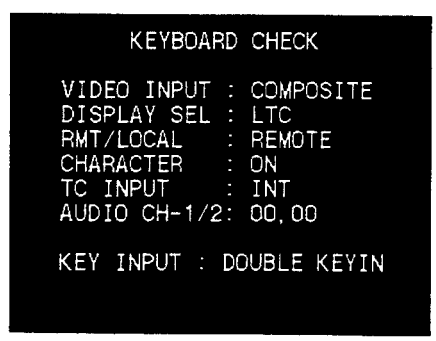


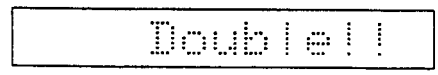




3. If any key is pressed or switch setting is changed, the condition that all displays are lighting is canceled.
   Information about the changed switch or the pressed key is displayed.
   If two or more switches are pressed at the same time, "DOUBLE KEYIN" is displayed.

   * Turn OFF the power to stop this mode.



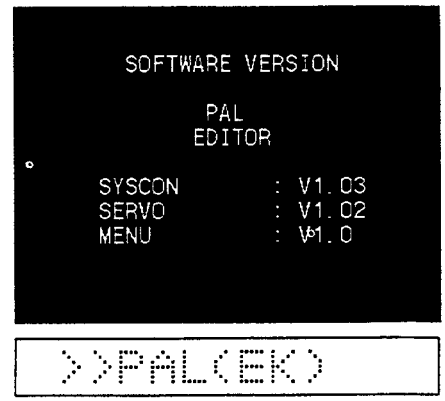


SOFTWARE VERSION

Press the (←) key or RESET key to return to the maintenance menu.

PAL : PAL, For EK
- EDITOR : Recorder and player of EDIT/1800P
- FEEDER : Player of EDIT/1600P
- RECORDER : Recorder and player/1400P
- PLAYER : Player/1200P

SYSCON : Version of IC4 on the SS-53 board
SERVO : Version of IC212 on the SS-53 board
MENU : Version of initial setup menu



* The content of display on the time counter can be changed by pressing the (↑) and (↓) keys.
  Returns to the maintenance menu using the (←) key or RESET key.

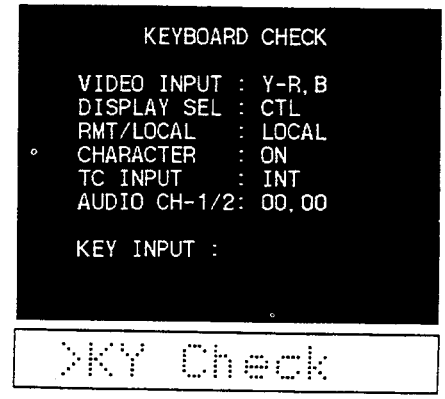
KEYBOARD CHECK

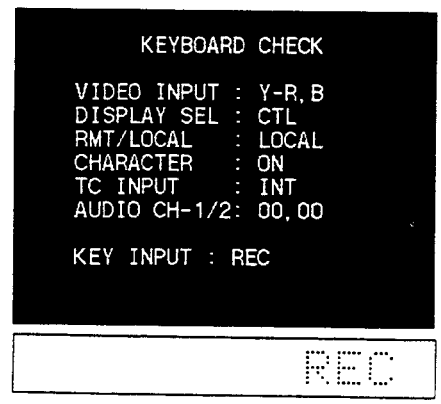
In this mode, it is able to check the key on the keyboard, slide switch and time counter.

1. Press the SET (YES) key, to enter into the KEYBOARD CHECK.

> Note : Once a machine enters the KEYBOARD CHECK mode, it cannot exit without turning off the power.

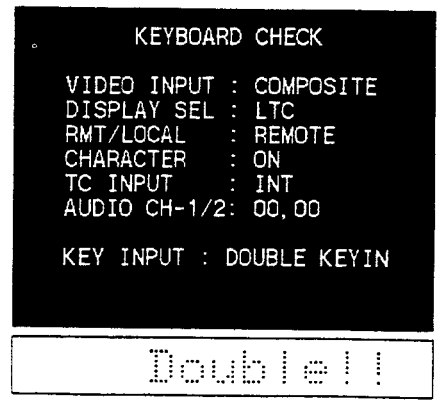
2. The monitor displays settings of all switches on the sub control panel. All dots of the time counter light.





3. If any key is pressed or switch setting is changed, the condition that all displays are lighting is canceled.
   Information about the changed switch or the pressed key is displayed.
   If two or more switches are pressed at the same time, "DOUBLE KEYIN" is displayed.

   * Turn OFF the power to stop this mode.



[The symptoms which seem to be defective.]

① Display function of the time counter is defective.
- There is a segment which does not light even in the mode of all lamps lighting.
- There is an abnormally bright or dark segment.
- When any key is not pressed, no display is expected, but a segment is lighting.

② Key enter is defective.
- Any key is not pressed, but a key name or "DOUBLE" is displayed.
  (When key setting is changed, the switch name is kept displayed. This is not trouble.)
- A key is pressed, but the key name is not displayed.

③ Key illumination is defective.
- A key is pressed, but the key is not illuminated.
- Any key is not pressed, but a key is illuminated.

④ Switch input is defective.
- A switch setting is changed, but the setting name is not displayed.

CF DATA CHECK

In this mode video signal and CF data is displayed.
Select the appropriate time counter item with the (↑), (↓) keys.

CF data: 0, 1, 2, 3 (field)

* Due to the display timings, only the even fields are displayed.

- DIFF OF REF : Display of field number only is not enough for identification of relative phase relationship. The difference from the REF. VIDEO ID is displayed in ( ).

REF VIDEO ID : The CF field Number of REF video signal.

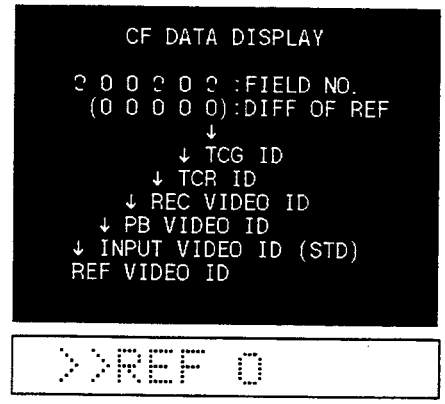
INPUT VIDEO ID : The CF field number of the input VIDEO signal.
The signals other than the composite signal has no CF information.
"0" is displayed.
When the input video signal is the composite signal, the STANDARD/ NONSTANDARD information of the input signal is also displayed.
(only on the monitor)

PB VIDEO ID : The signals other than the composite signal has no CF information.
In VIDEO EE mode, the CF field number of the input video signal is displayed.

REC VIDEO ID : The CF field number of the video signal to be recorded on tape during record mode.

TCR VIDEO ID : "0" is displayed. Playback TC signal.

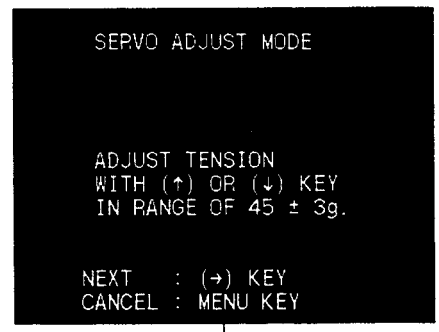
TCG ID : The CF field number of the TC data generated by TC generator.



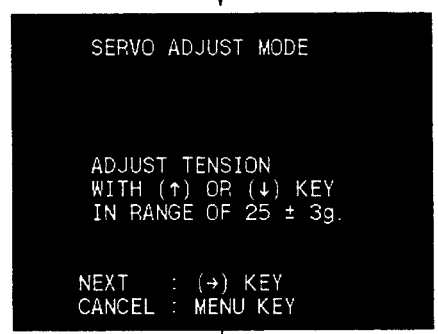
MEMORY DISPLAY

* This menu is Factory use.

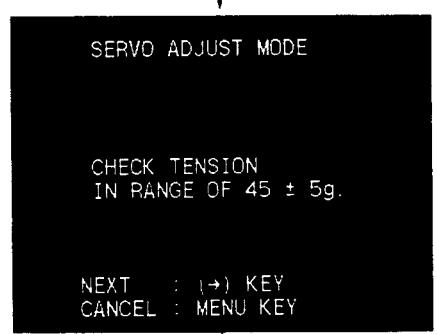
13. Keep pressing the Up/Down key until pointer of the tension measurement tool indicates **45 ± 3 g.**
14. When the adjustment is completed, press the right key.



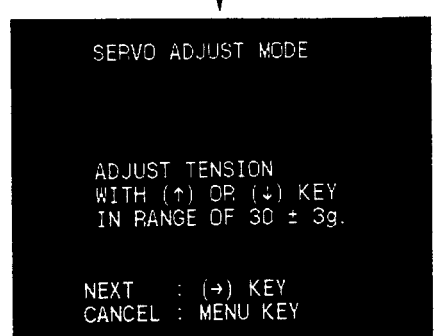
15. Keep pressing the Up/Down key until pointer of the tension measurement tool indicates **25 ± 3 g.**
16. When the adjustment is completed, press the right key.



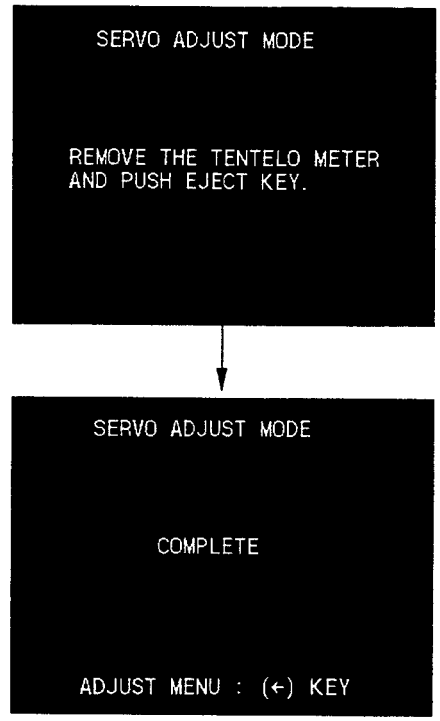
17. Confirm that pointer of the tension measurement tool indicates **45 ± 5 g.**
18. Press the right key to display the following screen. (Machine enters REV mode automatically.)



19. Keep pressing the Up/Down key so that the REV back tension becomes **30 ± 3 g.**
20. Press the right key to display the following screen.



21. Remove the tension measurement tool paying utmost care not to contact with the drum.
22. Press the EJECT button to eject the cassette tape.



23. Confirm that "COMPLETE" is displayed on monitor screen.

When "COMPLETE" is displayed, execute the "SAVE ADJUSTING DATA" to memorize the adjusting data in EEPROM after executing the "SAVE/LOAD CONTROL".

6-37-1. Tension Sensor Magnet Position Adjustment

Mode : Threading end mode

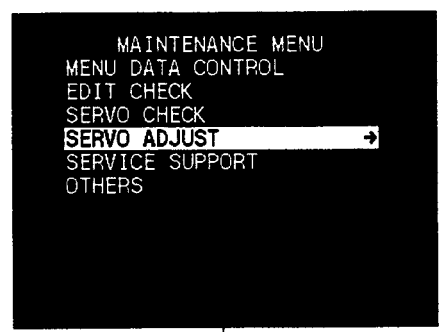
Tools :

TR Arm Position Ajustment Tool Parallelism pin 3 × 12 : 3-703-360-09
Eccentric screw driver : 3-702-390-02
or
Flat head 3 mm screw driver : 7-700-750-01

Preparation :

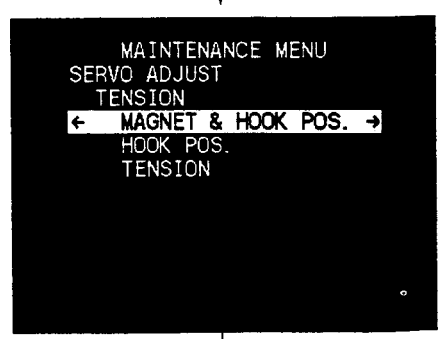
Connect a video monitor to the VIDEO OUTPUT 2 connector to display the characters.

1. Remove the Cassette Up Compartment.
2. After power is turned ON, press the eject key.
3. Display the "MAINTENANCE MENU" on the monitor screen. (Refer to section 4.)
4. Select "SERVO ADJUST" from the menu by Up/Down key.
5. Press the right key to display the following screen.

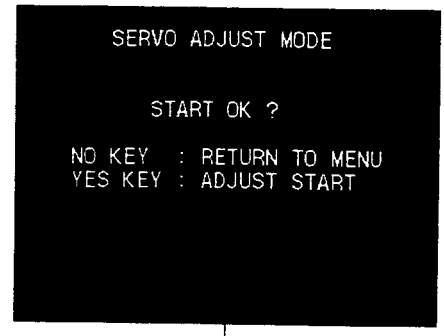


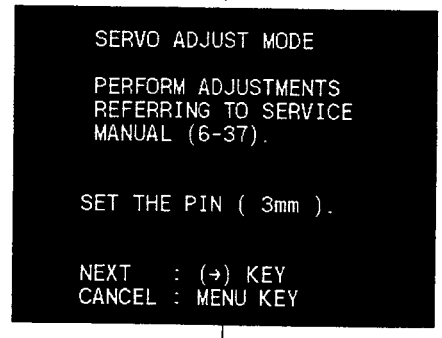
6. Select "TENSION" from the servo adjustment menu by Up/Down key
7. Press the right key to display the following screen.

8. Select "MAGNET & HOOK POS." from the Tension Servo Adjustment menu by Up/Down key.
9. Press the right key to display the following screen.



10. When preparation is ready, press YES key to start the adjustment.



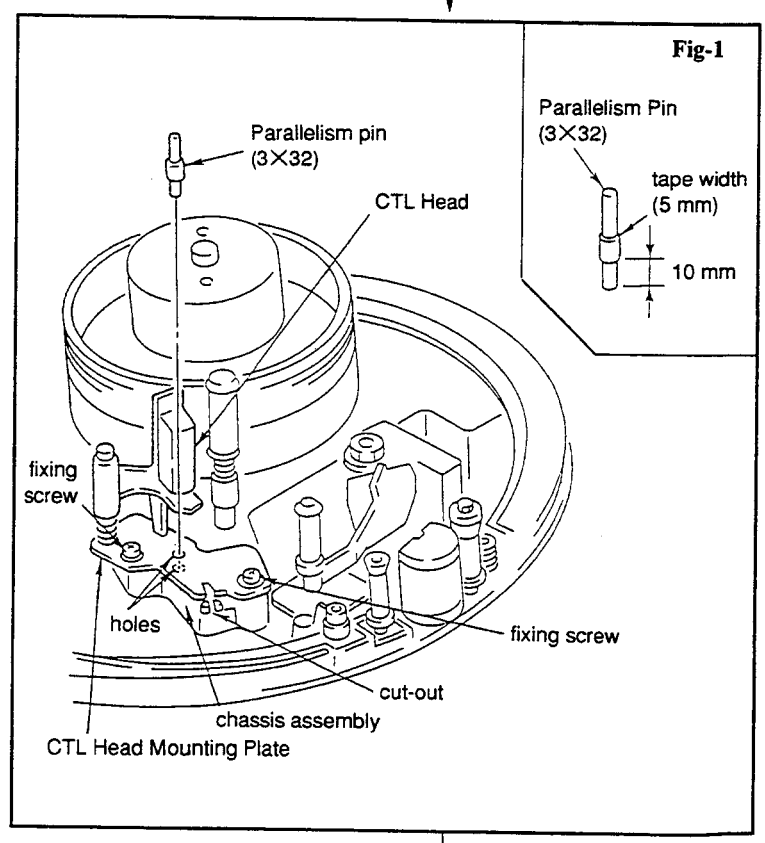


Adjustment after replacement

11. Wrap a 5 mm width vinyl tape 1 to 2 turns around the Parallelism Pin at the position of 10 mm from its end. (Refer to Fig-1)
12. Loosen the two fixing screws 1/2 to 1 turn holding the CTL Head Assembly.
13. Insert a flat (head) screw driver tip into the cut-out of the CTL Head Mounting Plate. Adjust the position so that the hole of the CTL Head Mounting Plate and the hole of the chassis are aligned.
14. Insert Parallelism Pin setting the TR Arm Position passing through the hole of the CTL Head Mounting Plate and the hole of the chassis.

Note : When moving the CTL head, be sure to perform the CTL Head Position Check/Adjustment. (Refer to section 7-7.)

Fig-1



7-6. CTL HEAD HEIGHT CHECK/ADJUSTMENT

Tools :

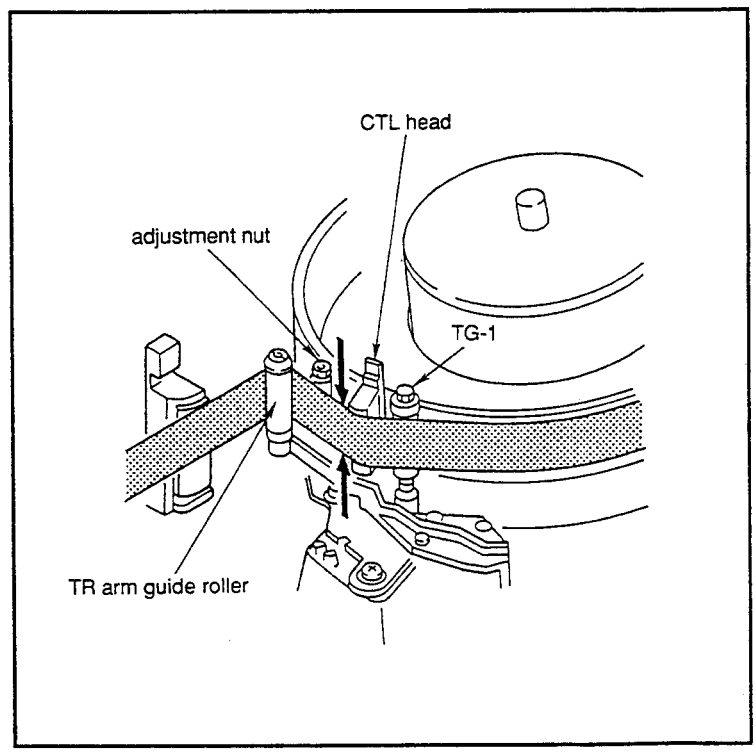
Alignment tape CR8-1A : 8-960-097-45
Dual trace oscilloscope
Box driver (diagonal length 4.5 mm)

Check procedure

1. Connect an oscilloscope.
   CH-1 : TP225/SS-53 board (C-1)
2. Set the switches on SS-53 board S201-1 and -5 to on.
3. Playback the 1 kHz recorded segment 1 kHz, 0 VU (8:00 to 10:00) on the CTL track of the alignment tape CR8-1A.
4. Press the tape (between the CTL head and TR arm guide roller) as shown with finger, and check that the RF signal level decreases.

Adjustment procedure

5. In the case that the signal level increases when the tape is pushed up, turn the adjustment nut as shown in clockwise for the maximum output.
6. In the case that the signal level increases when the tape is pressed down, turn the adjustment nut as shown in counter-clockwise for the maximum output.
7. Set the switches on SS-53 board S201-1 and -5 to off.



7-7. CTL HEAD POSITION CHECK/ADJUSTMENT

Tools :

Alignment tape CR2-1B : 8-960-096-01
Dual trace oscilloscope
–3 mm screw driver

Check procedure

1. Connect an oscilloscope.
   CH-1 : TP101/VP-43, VP-43A board (L-2)
   CH-2 : TP102/VP-43, VP-43A board (P-1)
   TRIG : CH-2
   * UVW-1400/1200 : VP-44, VP-44A
2. Playback the alignment tape CR2-1B.
3. Running the tape in play mode, press the RESET button on the sub control panel to set the tape path in the center position.
4. Press the Left and Right keys on the sub control panel which shift the tape path. Check that the RF signal amplitude decreases when the tape path of off tracking. (Refer to Fig-1.)
5. Press the RESET (NO) button on the sub control panel. Check that the center of the RF envelope has the maximum amplitude. (Refer to Fig-2.)
6. If the requirements in steps 4 and 5 are not satisfied, perform the next adjustment.

Adjustment procedure

7. Loosen the two screws fixing the CTL head ass'y about 1/2 turn. Insert –3 mm screw driver tip into the cut-out of the base. Move the CTL head in the direction shown by arrow to obtain the maximum amplitude at the center of the RF envelope. (Refer to Fig-3.)

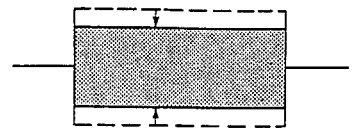


Fig-1.

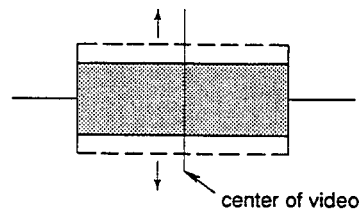
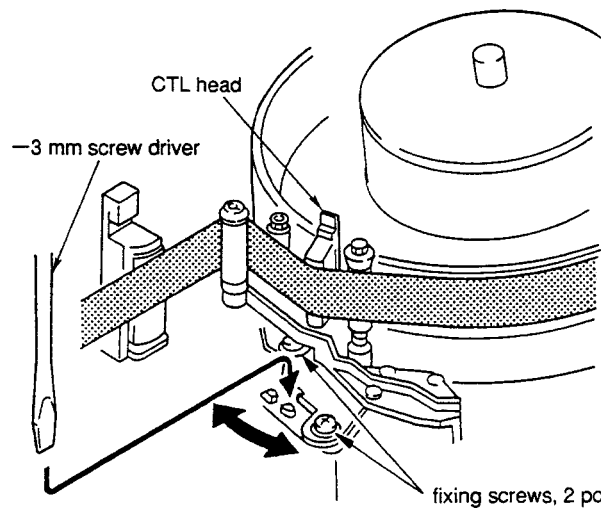


Fig-2.



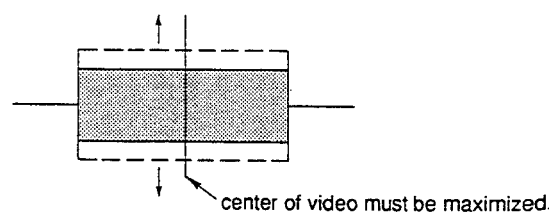


Fig-3.

7-6. CTL HEAD HEIGHT CHECK/ADJUSTMENT

Tools :

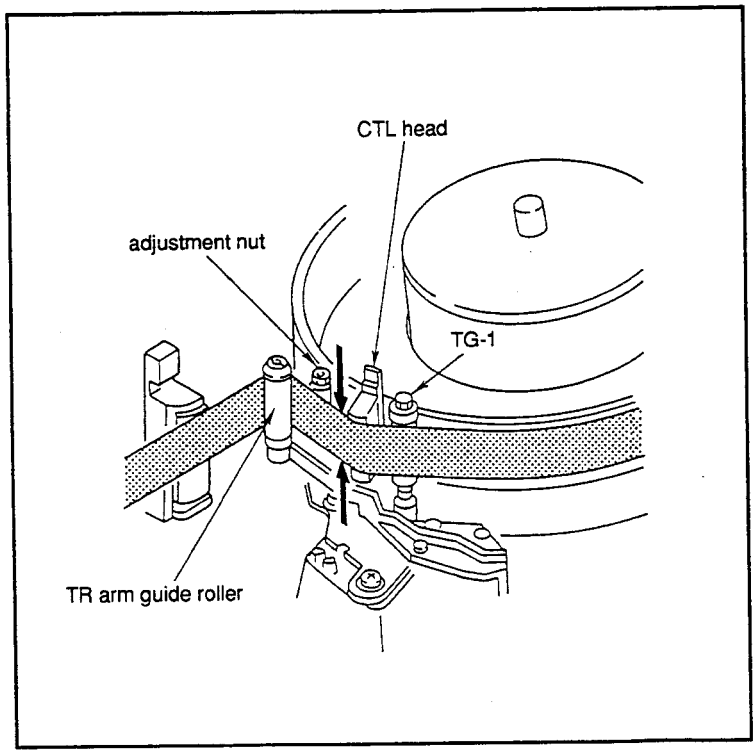
Alignment tape CR8-1B PS : 8-960-096-86
Dual trace oscilloscope
Box driver (diagonal length 4.5 mm)

Check procedure

1. Connect an oscilloscope.
   CH-1 : TP225/SS-53 board (C-1)
2. Set the switches on SS-53 board S201-1 and -5 to on.
3. Playback the 1 kHz recorded segment 1 kHz, 0 VU (8:00 to 10:00) on the CTL track of the alignment tape CR8-1B PS.
4. Press the tape (between the CTL head and TR arm guide roller) as shown with finger, and check that the RF signal level decreases.

Adjustment procedure

5. In the case that the signal level increases when the tape is pushed up, turn the adjustment nut as shown in clockwise for the maximum output.
6. In the case that the signal level increases when the tape is pressed down, turn the adjustment nut as shown in counter-clockwise for the maximum output.
7. Set the switches on SS-53 board S201-1 and -5 to off.



7-7. CTL HEAD POSITION CHECK/ADJUSTMENT

Tools :

Alignment tape CR2-1B PS : 8-960-096-51
Dual trace oscilloscope
–3 mm screw driver

Check procedure

1. Connect an oscilloscope.
   CH-1 : TP101/VP-43P, VP-43AP board (L-2)
   CH-2 : TP102/VP-43P, VP-43AP board (P-1)
   TRIG : CH-2
   *UVW-1400P/1200P : VP-44P, VP-44AP
2. Playback the alignment tape CR2-1B PS.
3. Running the tape in play mode, press the RESET button on the sub control panel to set the video tracking in the center position.
4. Press the Left and Right keys on the sub control panel which shift the video tracking. Check that the RF signal amplitude decreases when the video tracking of off tracking. (Refer to Fig-1.)
5. Press the RESET (NO) button on the sub control panel. Check that the center of the RF envelope has the maximum amplitude. (Refer to Fig-2.)
6. If the requirements in steps 4 and 5 are not satisfied, perform the next adjustment.

Adjustment procedure

7. Loosen the two screws fixing the CTL head ass'y about 1/2 turn. Insert –3 mm screw driver tip into the cut-out of the base. Move the CTL head in the direction shown by arrow to obtain the maximum amplitude at the center of the RF envelope. (Refer to Fig-3.)

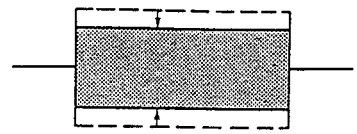


Fig-1.

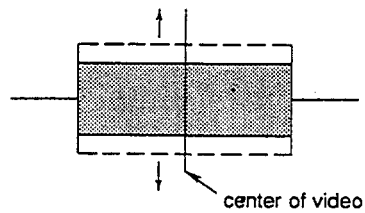
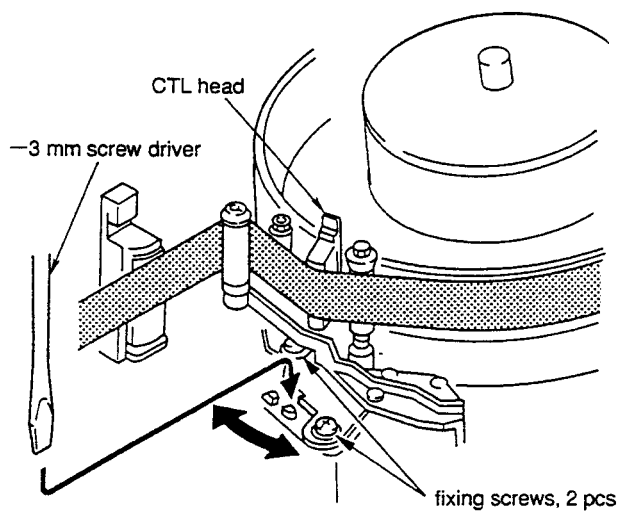


Fig-2.



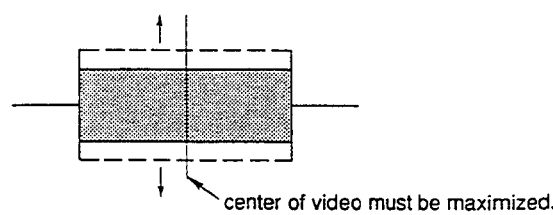


Fig-3.